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New York, Oct. 11, 1898.

To the Editor of the Railroad Gazette.

I have been reading with much interest your article, published last week, describing three disastrous collisions of passenger trains in Great Britain. The railroad men of this country are to be congratulated on the fact that you have thus summarized for them the facts of these interesting examples of how our English friends sometimes do not do it. To read through the whole of the official reports is tedious work. One of the "lessons from England" that we ought to learn is to have reports published in this country, by an impartial authority, whenever a railroad disaster occurs which would be instructive to operating officers; though it must be confessed that not every Board of Trade inspector's report is a model to be followed, either in conciseness or in completeness. As you must have noticed in reading Col. Addison's report on the collision at St. Johns, sufficient care is not always taken to fully describe all the conditions that throw light on the signalling practice that has to do with a collision.

I did not, however, start in to criticise the English Government officials, but English practice. You head your article "*Three Lessons from England.*" What do you mean by this? You use up about three columns in narrating the facts of these collisions, but the only "lesson" you suggest is that we answer to ourselves the question whether we are satisfied with our practice of depending upon a home signal to infallibly stop a train. The English do not thus depend; they clear the track beyond, and then tell the engineman, in effect, that he may overrun his home signal a quarter of a mile without running into any obstruction. Judging by the prominence given by you to the inspector's comments and recommendations, and by the space you give to the details, the lesson that you draw is that this absurdly excessive caution of the Englishmen is right and proper, and our practice is wrong; or, at least, is unnecessarily risky and ought to be made to conform to the English idea. Am I right in this assumption?

What evidence can be produced to show that the simple rules of the best signalling on American railroads are less safe than the wordy and complicated regulations of our English friends? There is no proof that the Atlantic City collision would have been prevented if the careless engineman had been notified at Pleasantville that he was likely to find his track obstructed at the crossing. He was grossly careless, and would he not have disregarded two warnings just the same as he did the one? With a record such as that here before us—three disastrous collisions, all within about four months, and all due to the most culpable disregard of plain rules, well known to the most inexperienced, how can it be claimed that English railroad employees are better than those of America, or of any other country, in their vigilance and attention to duty?

The way to prevent enginemen from running beyond stop signals is to give them to understand that "stop" means stop; not that it means stop provided they do not get in a hurry and conclude that they will risk breaking the rule to save a little time. At Dunbar, and, I presume, also at Barassie, the engineman deliberately disobeyed the distant signal, and that is all there is to it.

This is a case in which human nature manifests

itself about the same in adults as in children, and we may learn a lesson from the schoolmaster. We can imagine a schoolmaster—in England, perhaps—who would say to a boy, "If you do this thing twice I'll whip you, but if only once, no matter;" but who would expect to find any such philosophy in real life?

P. C. S.

P. C. S.

### To Clear a Signal by Two Levers, 900 ft. Apart.

Oct. 17, 1898.

To the Editor of the Railroad Gazette:

The severe requirements of the problem in signaling given on page 745 of the Railroad Gazette for Oct. 14, remind one of those set out for continuous brakes for freight trains before the air brake was accepted; the apparatus must be cheap, simple, durable, not liable to get out of order, must require no connections between the cars other than the usual couplings and must apply and release the brakes at the proper times with little interference from the engineman or trainmen—or something of that sort. The brake problem was solved by the adoption of a comparatively complicated and expensive appliance that did require special connections between the cars; perhaps this signal problem might finally have to be dealt with in a similar way.

Considering the details of the problem, it would seem that a special difficulty is the distance at which the distant signals would have to be worked. This point has a bearing on the character and cost of the installation and of the maintenance. If the distant signals are located 1,600 ft. from the homes, they must be worked mechanically over a distance of nearly half a mile. It would be useless to expect satisfactory working in that case unless the design, material and workmanship were first class at the outset, and the work of maintenance intelligent and sufficient. Of course the conditions would be better if the distance were 1,200 ft. (making a total of 2,100). The question how few levers could be used, affecting the cheapness and the simplicity of operation, depends upon the practicability of pulling several signals with one lever. Apparently, one lever (at each switch, B and P on the diagram), would be sufficient, so far as the requirements of operation are concerned.



Two levers, one for each home and its distant, might be fairly practical if they were connected by one of the devices that have been contrived for the purpose, so that the two signals would be moved in succession and not at the same time; in that way, excessively hard pulling might be avoided. Of course the signal levers would be interlocked with both switches by any simple means.

Coming now to the main point in the problem, the working of all the signals from either or both of two points, I will offer a suggestion for what it may be worth. Each signal lever at B (whether there be one, two or four), should be connected by a run of pipe to a corresponding lever at P designed to work the same signal or signals, so that the two levers would always work together. The obvious objection to this arrangement is that it is customary to lock isolated signal levers, and it would be necessary to unlock the levers at both switches before anything could be done. It is not, however, necessary that the levers should be locked or even latched; indeed, under the plan suggested, it is necessary that they should not be fastened at all. There are two objects in locking such levers. One is to prevent the pull of the counterweights from putting the signals to danger after they have been cleared; the other is to prevent the meddling of curious people who might be tempted to amuse themselves by throwing the levers if they found no obstacle in their way. To hold the signals clear there would be introduced between each lever and its signal connections a device, such as a crank rotating slightly beyond the dead point, a motion plate or an alligator jaw, arranged so that the final part of the movement of the lever would lock the signal connections against the pull of the signal counterweights; if necessary, a counterweight on the lever itself would prevent its displacement by the jar of passing trains. To guard against meddling the levers would be inclosed in a small cabin with a locked door, or, even more cheaply, in a housing that could be swung down or to one side on hinges when the signals were to be operated. C. A.

C. A.

### Railroad and Other Matters in China.

Shanghai, Sept. 17.

To the Editor of the Railroad Gazette:

Those who are best informed agree that it will be a long time before money can be found to build the Hankow-Canton or Nankin-Canton line.

The Peking-Hankow line has been given to the Belgians, but they have so far done nothing. The upper 80 miles is in Mr. Kinder's hands, and only awaits the rails to complete it. Eight thousand tons are of Hankow make and 4,000 are Cammell's make, Imperial Chinese Railway 85-lb. section. The Hankow rails are of fair quality, but of all shapes and

sizes, due to bad rolling. The fastenings are simply awful, both in design and execution. The mills are in very bad order, and accurate rolling is impossible. The Ching Kiang-Tien Tsin line will be put through and probably built by an Anglo-German combination, to prevent all bother of crossing Shantung or the German hinter-land. The scheme is a pretty good one, but I doubt if the money will be readily got.

The "Peking syndicate" is worthless, and nothing can ever be done in Shansi until the syndicate will have long ceased to exist. It is too far from the coast to compete with mineral available far nearer the markets.

The loan for the extension of the Imperial Railways of North China to New Chwang has not yet been arranged; the London terms are too severe. The English Government arranged with the Russians to withdraw all opposition, but no doubt Russian agents are at work in London to oppose the line in every way.

The Emperor is to go by rail to Tien Tsin Oct. 29, and special cars are being built by Mr. Kinder at Tongshan for his use and that of the Empress. The Emperor is kicking over the traces, and has bundled Li Hung Chang out, because he was opposing all improvements and was too friendly with the Russians and a tool of the Empress Dowager. Li seems certainly to have behaved very foolishly, and has become infirm in intellect.

Several syndicate mongers are here, all bent on personal profit, and none care a rap for China or her future. The ministers complain about a real want of bona fide capitalists. The small fry sent out to fish in the troubled waters are not the people we want to see succeed in their ends; we want real men, who will put their own money into the railroads and mines, and such are not here.

The Shanghai-Nankin job is also fizzling, and may come to nothing. The people in it seem in no hurry to start work, but only to shove the shares on the market at a big profit. The line is a good one, and it is a great pity if it is allowed to drop.

S. P.

[It will be observed that some of our correspondent's news has already become old, his letter having been passed in the Pacific by the cable despatches; but the bulk of it is fresh, and it is all important, as our correspondent has lived many years in China and knows what he is talking about. Below are a few notes from another letter dated Sept. 22, also written by a man in high authority.]

The American Canton-Hankow project is still where it was three months ago. The Hankow-Peking line, which was awarded to the Belgians nearly a year and a half since, and has been sick and dead several times, was recently closed again for the third time, ratified at Peking, etc. About a week ago the syndicate made a small deposit of money, less than 5 per cent. of what they agreed to deposit in bank by a certain date. Whether the deal will eventually be carried out is problematical. For "Belgian" writes "Russian," with persistent opposition on the part of the British Minister in Peking, and you will have the situation fairly and can guess as well as anyone whether the £4,000,000 can be raised under the required loan.

Li Hung Chang has been relieved from duty in the Tsung-Li-Yamen. His influence has all been in favor of Russia. Whether the old gentleman will again come to the surface is hard to tell.

The Shanghai-Woosung Railway, 9½ miles in length, was opened for traffic in August, after having been under construction for considerably more than a year. It was built by German engineers. Steel sleepers are used, stone ballast, four station buildings and a three-stall engine house. There are six small plate girders (built in Germany), the longest of which is 14 meters. Passenger cars, eight-wheel, built by Mr. Kinder at his Tong-Shan shops. Three American tank locomotives, built by the Brooks people. It is being operated by the engineer who built it, Mr. Hildebrand.

### Joint Traffic Association Declared Illegal.

The United States Supreme Court on Monday last decided the Joint Traffic Association case in favor of the United States and against the railroads. The decision was written by Judge Peckham. He said that the court could distinguish no difference between this case and that of the Trans-Missouri Association, which, in March, 1897, was decided against the railroads. (Justice Peckham wrote that opinion also. See Railroad Gazette, March 26 and April 2, 1897.) He said the only new point involved was as to the constitutionality of the Anti-Trust act. The court had reached the conclusion that as railroad corporations performed duties of a semi-public character, it was within the constitutional power of Congress to regulate them, as provided by the Anti-Trust act. The only question then was as to the policy of Congress in adopting such a measure, and with questions of policy the court had nothing to do.

The opinion, which was very brief, was concurred in by Chief Justice Fuller and Judges Harlan, Brewer and Brown. Justices Gray, Shiras and White dissented, and Judge McKenna took no part in the case.



as the prosecution of it was begun while he was Attorney-General. The decision of the United States Circuit Court for the Southern District of New York and of the United States Court of Appeals, both of which were favorable to the Joint Traffic Association, are reversed.

The present decision gives a history of the early stages of the litigation and the main issue between the government and the association. After pointing out the similarity between the Trans-Missouri case and the present one, the opinion says:

"So far as the establishment of rates and fares is concerned, we do not see any substantial difference between this agreement and the one set forth in the Trans-Missouri case. In that case the rates were established by the agreement, and any company violating the schedule of rates as established under the agreement was liable to a penalty. A company could withdraw from the association on giving 30 days' notice, but while it continued a member it was bound to charge the fixed rates under a penalty for not doing so. In this case the companies are bound to charge the rates fixed upon originally in the agreement or subsequently recommended by the Board of Managers, and the failure to observe their recommendations is deemed a violation of the agreement. The only alternative is the adoption of a resolution by the Board of Directors of any company providing for a change of rates, so far as that company is concerned, and the service of a copy thereof upon the Board of Managers.

"It is this provision which is referred to by counsel as one which constitute a material and important distinction between the two agreements. It is said to be designed solely to prevent secret and illegal competition therein, and that unless it can be regarded as restraining competition so as to restrain trade there is not even an appearance of restraint of trade in the agreement. It is obvious, however, that if such deviation from rates by any company from those agreed upon be tolerated, the principal object of the association fails of accomplishment, because the purpose of its formation is the establishment and maintenance of reasonable and just rates and a general uniformity therein. If one company is allowed while remaining a member of the association to fix its own rates and be guided by them, it is plain that as to that company the agreement might as well be rescinded.

"This result was never contemplated. In order, therefore, not only to prevent secret competition, but also to prevent any competition whatever among the companies party to the agreement, the provision is therein made for the prompt action of the Board of Managers whenever it receives a copy of the resolution adopted by the Board of Directors of any one company for a change of the rates established under the agreement. By reason of this provision the board undoubtedly has authority and power to enforce the uniformity of rates as against the offending company upon pain of an open, rigorous and relentless war of competition against it on the part of the whole association. Thus the power to commence such a war on the part of the managers would operate to most effectively prevent a deviation from rates by any one company against the desire of other parties to the agreement. Competition would be prevented by the fear of the united competition of the association against the particular member.

"Under these circumstances the agreement, taken as a whole, prevents and was evidently intended to prevent, not only secret, but any competition." \* \* \*

"The natural and direct effect of the two agreements (the Joint Traffic and the Trans-Missouri) is the same, viz.: To maintain rates at a higher level than would otherwise prevail, and the differences between them are not sufficiently important or material to call for different judgments in the two cases on any such ground."

The opinion takes up the constitutionality of the Anti-Trust Act as affecting railroads. Justice Peckham says that "it is worthy of remark that this question was never raised or hinted at upon the argument in the former case. \* \* \* The fact that not one of the many astute and able counsel for the transportation companies in that case raised an objection of such conclusive character, if well founded, is strong evidence that the reasons showing the invalidity of the act as construed do not lie on the surface and were not then apparent to those counsel.

"Upon the constitutionality of the act it is now earnestly contended that contracts in restraint of trade are not necessarily prejudicial to the security or welfare of society, and that Congress is without power to prohibit generally all contracts in restraint of trade, and that the efforts to do this invalidate the act in question."

The formation of corporations has never been regarded, the opinion states, as in the nature of contracts in restraint of trade. The same is true of partnership. Proceeding, the opinion says:

"When the grantees of this public franchise are competing railroad companies for interstate commerce we think Congress is competent to forbid any agreement or combination among them by means of which competition is to be smothered. \* \* \* We think it extends at least to the prohibition of con-

tracts relating to interstate commerce which would extinguish all competition between otherwise competing railroad corporations, and which would in that way restrain interstate trade or commerce.

"We do not think that when the grantees of this public franchise are competing railroads seeking the transportation of men and goods from one state to another that ordinary freedom of contract in the use and management of their property requires the right to combine as one consolidated and powerful association for the purpose of stifling competition among themselves, and of thus keeping their rates and charges higher than they might otherwise be under the laws of competition. And this is so, even though the rates provided for in the agreement may for the time be not more than are reasonable. They may easily and at any time be increased. It is the combination of these large and powerful corporations, covering vast sections of territory and influencing trade throughout the whole extent thereof, and acting as one body in all matters over which the combination extends, that constitutes the alleged evil, and in regard to which, so far as the combination operates upon and restrains interstate commerce, Congress has power to legislate and prohibit. The prohibition of such contracts may in the judgment of Congress be one of the reasonable necessities for the proper regulation of commerce, and Congress is the judge of such necessity and propriety, unless, in case of a possible gross perversion of the principle, the courts might be applied to for relief."

Referring to the claims of counsel regarding the general constitutional right of the citizen to make contracts and the extent of individual liberty under the fourteenth amendment, the opinion says: "The citizen may have the right to make a proper (that is, a lawful) contract, one which is also essential and necessary in carrying out his lawful purpose. The question which arises here is whether the contract is a proper or lawful one. We presume it will not be contended that the right of the citizen to pursue any livelihood or vocation includes every means of livelihood, whether lawful or unlawful. Notwithstanding the general liberty of contract which is possessed by the citizen under the Constitution we find that there are many kinds of contracts which, while not in themselves immoral, or mala in se, may yet be prohibited by the legislatures of the states or in certain cases by Congress. The question is, for us, one of power only and not of policy. We think the power exists in Congress, and that the statute is, therefore, valid."

Justice Peckham deals finally with the plea advanced that the court should retrace its step because of "the widespread alarm with which the Trans-Missouri decision was received, and the serious consequences which have resulted, or may soon result." After reviewing the care taken in reaching the former decision, the opinion says:

"And now, for the third time, the same arguments are employed and the court is again asked to recant its former opinion and to decide the same question in direct opposition to the conclusion arrived at in the Trans-Missouri case. As we have twice already deliberately and earnestly considered the same arguments which are now for a third time pressed upon our attention, it could hardly be expected that our opinion should now change from that already expressed. We have listened to the same arguments because the eminence of the counsel engaged, their earnestness and zeal, their evident belief in the correctness of their position, and, most important of all, the grave nature of the questions involved, called upon the court to again give to those arguments respectful attention."

In conclusion the opinion says: "It is not only possible, but probable, that good sense and integrity of purpose would prevail among the managers, and while making no agreement and entering into no combination by which the whole railroad interest, as herein represented, should act as one combined and consolidated body, the managers of each road might yet make such reasonable charges for the business done by it as the facts might justify. An agreement of the nature of this one, which directly and effectually stifles competition, must be regarded under the statute as one in restraint of trade, notwithstanding there are possibilities that a restraint of trade may also follow a competition that may be indulged in until the weaker roads are completely destroyed and the survivor thereafter raises rates and maintains them. Coming to the conclusion we do, in regard to the various questions herein discussed, we think it unnecessary to further allude to the other reasons which have been advanced for a reconsideration of the decision in the Trans-Missouri case."

No dissenting opinion was filed, it being merely announced that the three Justices named dissented.

#### American Materials for the Chinese Eastern Railroad.

In our issue of Sept. 30 we published an article by Mr. M. Sergey Friede, descriptive of the Chinese Eastern Railroad, in which appeared the statement that the road has long had its purchasing agents in America, where a permanent office is maintained. To appreciate the activity of these agents, one has

to but go over the list of materials to be supplied, which includes surveying instruments, track tools, rail benders, hand and inspection cars, jacks, shovels, nails, pig iron, paints, oils, lanterns, candles, saws, axes, scales, carpenters' and blacksmiths' tools, wheelbarrows, rope, steam rock drills, boilers, office furniture and stationery, all of which must reach the railroad in the shortest time possible.

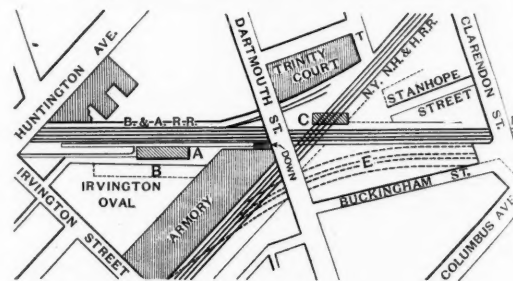
Besides these and numerous other articles, the agents have bought all necessary machinery for a waterworks and a flour mill, and are now preparing to buy an entire outfit of machinery for a railroad shop, including the necessary apparatus and piping for heating by steam. The Carnegie Steel Co., Ltd., is furnishing 1,900 tons of 21-foot steel beams and fittings for temporary bridges; the Newburg Ice Machine Co., a two-ton ice-making machine; Howe Scale Co., large number of scales; Wyoming Shovel Works, 15,000 shovels; General Electric Co., electrical apparatus for shops; Standard Rope Co., 200,000 lbs. of manila rope; Atha Tool Co., track tools, and Klein, Logan & Co., picks and bars.

Mr. Friede, who has charge of the office buying these materials, has made two trips to Manchuria and expects to make a third as soon as the large orders he now has in hand have been placed.

#### The Boston & Albany Back Bay Station.

The Boston & Albany is not uniting with the New York, New Haven & Hartford in the matter of the station at the "Back Bay" in Boston. The New Haven road has already begun work on a station at the southeast side of the grade crossing, and a plan of the structure was shown in the Railroad Gazette of March 18 last. The improvements to be made by the Boston & Albany will consist in the provision of better facilities on substantially the present sites of its stations; that is, west of the crossing on the south side for eastbound trains, and east of the crossing on the north side for westbound trains. In the latter case, however, the stopping place will be a little farther west, as indicated on the accompanying diagram.

The choice of location allowed the Boston & Albany by the Boston Terminal Act of 1896 included areas situated on the line of the road both east and west of



Back Bay Stations at Boston.

Dartmouth street. The company will make use of both; the eastbound and the westbound stations will be west and east of Dartmouth street, respectively. Both stations are plain rectangular, one-story granite buildings, with wooden double-pitch roof and brown-stone trimmings. Both will be placed on a level with the tracks and therefore about 18½ ft. below that of the adjacent streets. A. W. Longfellow is the architect. The eastbound or inward station is about half way between Dartmouth street and Huntington avenue (A on plan), behind the Irvington Oval, of which a strip, B, may be taken by the company to enlarge the station grounds. It will be reached from Dartmouth street by the flight of steps now leading to the company's Huntington avenue platform, and from Huntington avenue at the corner of Irvington street by a driveway and path. The westbound or outward station is opposite the new station of the New Haven road, and on the site (C) now occupied by the tracks of the latter, which will be taken up when the Park square station is abandoned. It will be approached, like the inward station, by a flight of steps from Dartmouth street, and on the other side by a driveway and path from Trinity place, T. The present westbound station is about at D; the new station of the New Haven road is at E.

The Boston & Albany has already broken ground for the eastbound station. Work on the other cannot be begun until the Park square station has been finally abandoned and the tracks to it taken up.

#### A Pittsburgh Consolidation for the Union Railroad.

The Pittsburgh Locomotive & Car Works have recently delivered to the Union Railroad Co., Pittsburgh, two consolidation engines, which are, we suppose, the largest engines ever built. An engraving of one of these, made from a photograph, is shown herewith, and we have tabulated comparative dimensions of a considerable number of recent heavy locomotives. The table is in part reprinted from our issue of Jan. 7 last, but we have added the Pittsburgh engine and the Pennsylvania Class H-5.

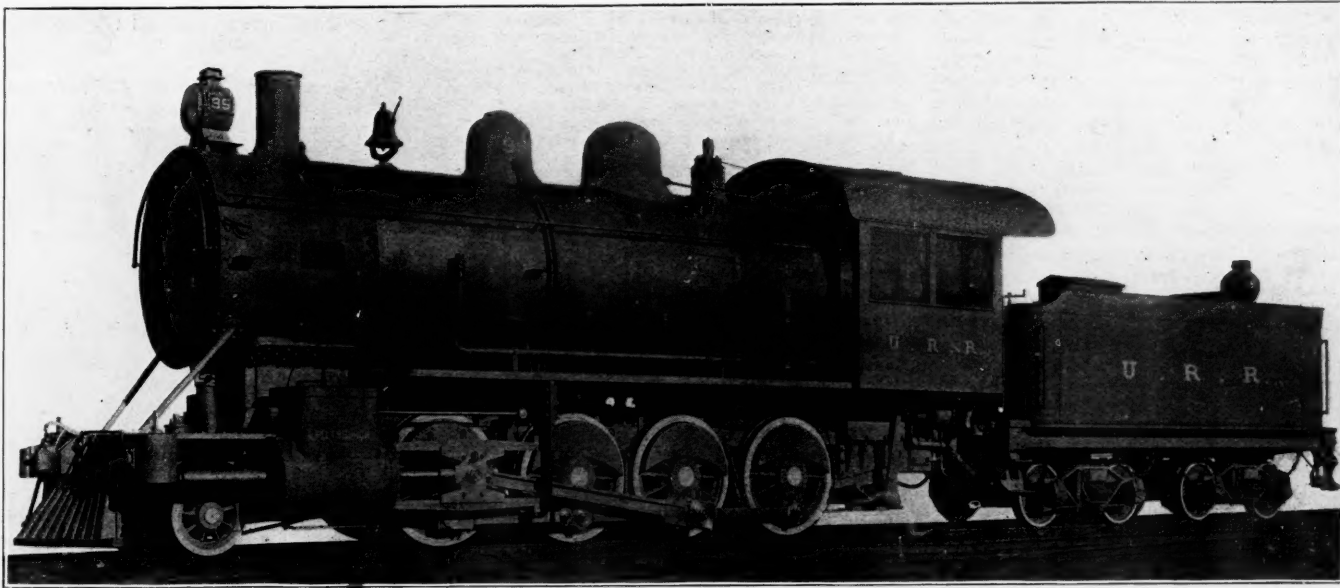
The line over which these engines work extends from Munhall to North Bessemer, Pa., about 12

miles. It is a part of the Carnegie System, connecting the Duquesne Furnaces, Homestead Steel Works and Edgar Thomson Steel Works. Some four miles of the line has grade of 70 ft. to the mile, and about 2,000 ft. (a point commencing at the yard near Edgar Thomson Steel Works, and passing up over the line of Pennsylvania Railroad and ending at the foot of the 70 ft. incline), has a grade of 2.4 per cent.

The cylinders are of the half saddle type, made heavy, and have great depth longitudinally. A steel

Name of builder.....	Pittsburgh Locomotive Works
Name of operating road.....	Union Railroad
Kind of fuel to be used.....	Bituminous coal
Weight on drivers.....	208,000 lbs.
" " truck wheels.....	22,000 lbs.
" " total.....	230,000 lbs.
" " of tender, loaded.....	104,000 lbs.
" " total of engine and tender.....	334,000 lbs.
Tractive power.....	53,292 lbs.
Dimensions.	
Wheel base, total, of engine.....	24 ft. 0 in.
" " driving.....	15 ft. 7 in.
" " total (engine and tender).....	54 ft. 9 in.

Seams, kind of—Horizontal, butt joint, double welged and sextuple riveted.	
" " circumferential.....	Double riveted
Thickness of tube sheet.....	1 1/2 in.
Crown sheet supported by stays.....	1 1/2 in. diameter
Dome, diameter.....	32 in.
Safety valves.....	Two 3-in. open pops and one 3-in. muffer
Water supplied through two No. 11 injectors.	
Tubes.	
Tubes, number.....	355
" material.....	Knobbed charcoal iron
" diameter, outside.....	2 1/2 in.
" length over sheets.....	15 ft. 0 in.



Consolidation Locomotive for the Union Railroad.  
Built by the PITTSBURGH LOCOMOTIVE & CAR WORKS, Pittsburgh, Pa.

plate 1 1/2 in. thick, and of the same width as the bottom of the saddle, extends across and is bolted to the lower frames, and to this plate as well as to the frames the cylinders are securely fastened. Heavy bolts passing through the top frame bars, front and back of saddle, form additional transverse ties, and relieve the saddle casting from all tensile strains. Longitudinal strains usually transmitted to cylinders through the frames are largely absorbed by the use of a casting extended from the bumper beam well up to the saddle, securely bolted to top and bottom front frames. This casting also acts as a guide for the bolster pin of the truck. This method of relieving the cylinders of longitudinal stress was introduced by the Pittsburgh Locomotive Works nearly two years ago, and has proved, in practical use on a large number of locomotives, to be of great value in reducing breakage of saddle castings. The frames are 4 1/2 in. wide and have been cut from rolled steel slabs made by the Carnegie Steel Co. and weigh 17,160 lbs. per pair, finished.

These locomotives are now in daily use, steaming well, are not extravagant in the use of fuel and water, and appear to have ample grate surface for the work required of them.

We hope later to show elevations which will clearly show the design and proportions, and explain how it

Length over all, engine.....	39 ft. 8 1/2 in.
" " total, engine and tender.....	65 ft. 3 1/2 in.
Height, center of boiler above rails.....	9 ft. 3 1/2 in.
" " of stack above rails.....	15 ft. 6 in.
Heating surface, firebox.....	206.5 sq. ft.
" " tubes.....	3,116.5 sq. ft.
" " total.....	3,322 sq. ft.
Grate area.....	33.5 sq. ft.

Wheels and Journals.

Drivers, number.....	Eight
" " diameter.....	54 in.
" " material of centers.....	Steelled cast-iron
" " main.....	Cast steel
Truck wheels, diameter.....	30 in.
Journals, driving axle, size.....	8 in. x 12 in.
" " truck.....	6 in. x 10 in.
Main crank pin, size.....	7 in. x 7 in.
Axles and crank pins.....	Carnegie steel

Cylinders.

Cylinders, diameter.....	23 in.
Piston, stroke.....	32 in.
" " rod, diameter.....	4 1/2 in.
" " and valve stem packing.....	4 1/2 in.
Main rod, length, center to center.....	9 ft. 10 1/2 in.
Steam ports, length.....	20 in.
" " width.....	1 1/2 in.
Exhaust ports, length.....	20 in.
" " width.....	3 1/4 in.
Bridge, width.....	1 1/2 in.
Cylinders and valves oiled by sight feed lubricator.	

Valves.

Valves.....	Balanced
" " greatest travel.....	6 in.
" " outside lap.....	1 in.
" " inside lap or clearance.....	0
" " lead in full gear.....	1 1/2 in.

Firebox.	
Firebox, length.....	10 ft. 0 in.
" " width.....	3 ft. 4 1/2 in.
" " depth, front.....	63 in.
" " back.....	69 1/2 in.
" " material.....	Carnegie firebox steel
" " thickness of sheets, crown.....	1 1/2 in.
" " " " sides and back.....	1 1/2 in.
" " " " tube.....	1 1/2 in.
" " brick arch.....	Supported on studs
" " water space, width.....	Front, 4 in.; sides, 4 in.; back, 4 in.
Grates.....	Cast-iron, rocking pattern
Smokebox.	
Smokebox, diameter.....	83 1/4 in.
" " length from tube sheet to end.....	68 1/2 in.
Other Parts.	
Exhaust nozzle.....	Single
" " diameter.....	6 1/2 in.
" " distance of tip below center of boiler.....	5 1/2 in.
Netting, size of mesh.....	2 in. x 2 in.
Stack.....	Taper
" " least diameter.....	17 in.
" " greatest.....	18 in.
" " height above smokebox.....	2 ft. 9 in.
Track sander.....	Pneumatic
Power brakes.....	Westinghouse American

Tender.

Type.....	With swivel trucks
Tank capacity, water.....	5,000 gals.
" " coal.....	10 tons
Kind of material in tank.....	Carnegie steel
Thickness of tank sheets.....	1/4 in. and 3/8 in.
Type of underframe.....	Steel channels
Type of truck.....	Diamond
Truck.....	With rigid bolster
Type of truck springs.....	Double elliptic

Table of Dimensions of Certain Heavy Locomotives.

	Pittsburgh Consolidation.	Pennsylvania, Class H-5, Consolidation.	Twelve-wheel locomotive, Great Northern.	Special Mountain engine, Mexican Central.	Twelve-wheel locomotive, Northern Pacific.	Decapod tank locomotive, St. Clair Tunnel.	Decapod, Burlington & Missouri River.	Decapod, Erie.
Name of builder.....	Pittsburgh.	Penn. Railroad.	Brooks.	Brooks.	Schenectady.	Baldwin.	Rogers.	Baldwin.
Fuel.....	Bituminous.	Bituminous.	Bituminous	Bituminous coal or wood	Bituminous	Anthracite.	Bituminous	Anthracite.
Weight on drivers, lbs.....	208,000	177,000	172,000	145,200	150,000	180,000	150,200	172,000
" " trucks.....	22,000	21,000	40,750	F. 23,450 B. 24,800	36,000			23,000
" " total.....	230,000	198,000	212,750	193,450	186,000	180,000	150,300	195,000
Wheel base, total, of engine.....	24 ft.	25 ft. 1 1/2 in.	26 ft. 8 in.	28 ft. 2 in.	26 ft. 4 in.	18 ft. 5 in.	17 ft. 10 in.	27 ft. 3 in.
" " driving.....	15 ft. 7 in.		15 ft. 10 in.	13 ft. 0 in.	15 ft. 6 in.	18 ft. 5 in.	17 ft. 10 in.	19 ft. 10 in.
Length over all, engine.....	39 ft. 8 1/2 in.		41 ft. 4 in.	36 ft. 6 3/4 in.		39 ft. 10 1/4 in.	35 ft. 8 in.	
Heating surface, firebox.....	206.5 sq. ft.	197 sq. ft.	235 sq. ft.	215.0 sq. ft.	206.5 sq. ft.	188.0 sq. ft.	180.0 sq. ft.	234.3 sq. ft.
" " tubes.....	3,116.5 sq. ft.	2,720 sq. ft.	3,045 sq. ft.	2,585.0 sq. ft.	2,721.6 sq. ft.	2,218.8 sq. ft.	2,172.0 sq. ft.	2,208.8 sq. ft.
Heating surface, total.....	3,322 sq. ft.	2,917 sq. ft.	3,280 sq. ft.	2,803 sq. ft.	2,943.4 sq. ft.	2,411.8 sq. ft.	2,352.0 sq. ft.	2,443.1 sq. ft.
Grate area.....	33.5 sq. ft.		34 sq. ft.	31.45 sq. ft.	35.0 sq. ft.	38.6 sq. ft.	37.5 sq. ft.	89.5 sq. ft.
Drivers, diam.....	54 in.	56 in.	55 in.	49 in.	55 in.	50 in.	50 in.	50 in.
Cylinders, diam.....	23 in.	23.5 in.	21 in.	21 in.	23 and 34 in.	22 in.	22 in.	16 and 27 in.
" " stroke.....	32 in.	28 in.	34 in.	26 in.	30 in.	28 in.	28 in.	28 in.
Boiler, type.....	Straight, with slop'g back end.		Belpaire.	Belpaire wagon top.	Extended wagon top.	Straight.	Belpaire.	Straight.
Working steam pressure, lbs. per sq. in.....	200	185	210	180	200	160	160	180
Boiler, outside diam. barrel.....	80 in.		78 in.	78 in.	72 in.	74 in.	68 in.	76 in.
Firebox, length.....	10 ft.		10 ft. 4 in.	10 ft. 1 in.	10 ft. 3 in.	11 ft. 7 in.	11 ft. 6 in.	10 ft. 11 1/2 in.
" " width.....	3 ft. 4 1/2 in.		3 ft. 4 1/2 in.	3 ft. 2 1/2 in.	3 ft. 6 in.	3 ft. 6 1/2 in.	3 ft. 5 in.	8 ft. 2 1/2 in.
" " depth, front.....	76 1/2 in.		86 1/2 in.	82 in.	77 in.	64 1/2 in.	61 1/2 in.	
" " back.....	69 1/2 in.		79 in.	75 in.	73 1/2 in.	61 in.	59 in.	
Tubes, number.....	355	369	376	412	382	281	229	354
" " outside diam.....	2 1/4 in.	2 in.	2 1/4 in.	2 in.	2 1/4 in.	2 1/4 in.	2 1/4 in.	2 in.

has been possible to design a locomotive of such great weight without adding "fat" or unnecessary cast iron or other material to bring the locomotives up to the required weight; the engine is big all over.

Pittsburgh Locomotive for the Union Railroad Company.  
General Description.  
Type..... Consolidation  
Road number..... 95

Boiler.

Boiler, type of.....	Straight, with sloping back end
" " water test.....	220 lbs.
" " steam test.....	200 lbs.
" " working pressure.....	200 lbs.
" " material in barrel.....	Carnegie steel
" " thickness of material in barrel.....	1 1/2 in.
" " diameter of barrel at front sheet.....	80 in.
" " throat.....	83 1/2 in.
" " back head.....	74 1/2 in.

Diameter of truck wheels.....	33 in.
" " and length of axle journals.....	5 in. x 9 in.
Distance between centers of journals.....	76 in.
Diameter of wheel fit on axle.....	6 1/2 in.
" " of center of axle.....	5 1/2 in.
Length of tender frame over bumpers.....	22 ft. 1 1/2 in.
" " tank.....	20 ft. 6 in.
Width " ".....	9 ft. 8 in.
Height of tank, not including collar.....	56 in.
" " over collar.....	68 in.
Type of back drawhead.....	M. C. B. coupler



### The Superintendents of Bridges and Buildings.

The eighth annual convention of the Association of Railway Superintendents of Bridges and Buildings was held in Richmond, Va., Oct. 18 to 20, as announced. The following gentlemen were elected officers of the Association for the coming year: President, Joseph H. Cummin, Long Island Railroad, Long Island City, N. Y.; First Vice-President, Aaron S. Markley, Chicago & Eastern Illinois, Danville, Ill.; Second Vice-President, C. C. Mallard, Southern Pacific, Algiers, La.; Third Vice-President, Walter A. Rogers, Chicago, Milwaukee & St. Paul, Chicago; Fourth Vice-President, Joseph M. Staten, Chesapeake & Ohio, Richmond, Va.; Secretary, S. F. Patterson, Boston & Maine, Concord, N. H.; Treasurer, N. W. Thompson, Pennsylvania Lines West of Pittsburgh, Fort Wayne, Ind. Executive Committee: Wm. S. Danes, J. H. Markley, W. O. Eggleston, R. T. Hefflin, F. W. Tanner, A. Zimmerman.

The place of meeting for next year is to be Detroit, Mich.

We have already mentioned the attractive list of excursions arranged for the pleasure and profit of the Association. These included a trip to Old Point Comfort and Newport News, visits to various tobacco factories, to the battlefield of Seven Pines, etc.

Abstracts of various committee reports which were presented at the convention will be found in this issue, and a list of the exhibits follows:

#### Exhibits.

Fairbanks, Morse & Co., Chicago, exhibited a gasoline engine and air compressor and gasoline pump; Sheffield velocipede hand-car, No. 16, weighing 50 lbs.; hand-car; Sheffield cattle guards; Barrett track jacks; McHenry track gage; McHenry track level; Sheffield pressed steel track gage. A Sheffield motor car (gasoline) was exhibited on the tracks of the R. F. & P. Ry.

The Chicago Pneumatic Tool Co., Chicago, exhibited under air the following pneumatic tools: Pneumatic riveter up to 1½-in. rivet; also a smaller one up to 1 in.; a hand-power riveter up to 1 in.; five pneumatic piston air drills, all sized holes, up to 2¼ in.; Boyer pneumatic hammers, all sizes; pneumatic hoist, lifting 1½ tons; Whitelaw pneumatic wood boring drill; Whitelaw reversible drill; a new machine for cutting out locomotive flues.

A. O. Norton, Boston, a complete line of ball-bearing jacks.

### Floors for Shops and Roundhouses.

The committee appointed by the Association of Superintendents of Bridges and Buildings to report on the best floors for shops and roundhouses consisted of Messrs. Merrick, Eggleston, Pullen, Cahill, Gilbert and Thompson. Extracts from their report follow:

Your committee believes that good vitrified brick, properly laid, will give the best satisfaction in all roundhouses which are used for anything more than storage purposes.

In this we have a floor that is smooth, firm, hard, and practically indestructible. It is absolutely unaffected by water, heat, oils, acids or grease, and is easily cleaned, while one important advantage is in the ease with which it can be repaired, since any part may be taken up and replaced by common labor without the slightest injury to the floor as a whole.

A concrete foundation is recommended by some; but, except in cases where the natural ground is not firm, or where the floor is to be subject to extremely heavy loads, it is not considered necessary.

Following is the cost of brick floors as put in on several roads:

C. & N. W. Ry.—Renewing floor in round house at Wipona, Minn. Taking out old plank floor and replacing it with vitrified brick. Twenty-one stalls. Actual cost of laying 16,000 sq. ft. at 8½¢, \$1,350.04.

Brick used were made by Flint Brick Co., of Des Moines, Ia. In size are about 8½ in. x 3½ in. x 2½ in. They are laid on edge, requiring six or seven brick to the square foot.

C. R. I. & P. Ry.—Cost of brick floor in freight repair shop, 97 ft. x 212 ft. at Horton, Kan., including concrete foundation under rails of nine tracks, brick foundation under truck track, cement drains at three tracks and taking out old wood floor.

Concrete under rails, 1,940 lin. ft.	\$519.40
Drains, cement, 582 lin. ft.	147.11
Paving 19,885 sq. ft. on edge per sq. ft.	1,369.97
Laying brick wall under one truck track	34.60
Taking out 19,885 sq. ft. old floor and preparing for brick	181.82
<b>Total cost</b>	<b>\$2,252.90</b>

If brick floor is grouted with cement (Portland) add one-half cent per square foot.

The Norfolk & Western Railway use a brick made by the Virginia Paving Brick Co. The cost is given for 1 sq. yd. of finished floor about as \$1.25.

C. M. & St. P. Ry.—Cost per square yard of brick floor, \$0.85.

Erie.—Cost per square yard of brick floor, \$1.04½.

In order to do full justice to the subject, we insert briefly a few recommendations.

A concrete floor with top dressing of Portland cement is recommended by one member as giving a very smooth and durable floor. It can be readily washed without injury, will withstand the effects of heavy jacking, and does not chip if properly handled. Any needed repairs are easily made by common labor. The cost is given at from 10 cents to 20 cents per foot, varying according to thickness of concrete and cost and quality of materials. Similar to this, but with a different surface, is a concrete floor with top dressing of 1 in. of asphalt in place of the Portland cement. The cost of such a floor would probably be from 20 cents to 30 cents per square foot. An objection urged against the asphalt covering is that in hot weather it becomes soft and liable to indentation under heavy loads, while if a hard asphalt is used it will chip.

Cinders form a very cheap, and for large roundhouses a very poor floor.

Disintegrated granite is being largely used by the Union Pacific Railway. It is found in large quantities at Sherman, Wyo. It is understood that this

railway is replacing all the old plank floors in roundhouses with this granite gravel.

Cedar blocks well laid form a neat, clean, and durable floor. It is stated that great care must be taken, if any heavy jacking is done, lest the blocks be forced down through the planks of the foundation.

On the C. & E. I. Ry. the cost is given as \$0.081 per square foot.

A cedar block floor in Chicago avenue roundhouse, C. & N. W. Ry., costs 11 cents per square foot.

Very similar to cedar block floors are those made from timber blocks sawed from old bridge timbers. Such a floor constructed of 6-in. or 8-in. blocks set on 2-in. hemlock plank which rest on 3 in. of dry sand, gravel or cinders, has been used on the Ashland division of the C. & N. W. Ry. The cost is given as \$0.038 per square foot.

Granolithic concrete consists of a very fine grade of granite chips and best Portland concrete with top dressing of some cement. A similar surface to that of the ordinary concrete floor would result, but the cost is greater on account of added expense in materials. Cost per foot is stated to be about 30 cents, making it probably the most expensive of any of the floors under consideration.

#### Shop Floors.

In machine shops we find the recommendations almost as varied as are those for roundhouse floors. A brick floor answers many of the requirements, but there is good evidence in support of the objection that men cannot stand all day on such a floor or upon a surface of concrete or asphalt without feeling the bad effects of cold upon the feet. This difficulty is overcome to a large extent by the use of slatted floor racks or platforms at the machines where operatives stand. When machines are set upon a brick floor there should be special provision made for foundation. But this can hardly be urged as an objection, as it is necessarily the case with heavy machines under almost any circumstances.

A bedded plank floor has recently been laid in an extensive shop plant of the Boston & Albany Railroad. As this is somewhat novel, a description of the methods of building may prove interesting. The earth is well compacted and brought to the proper surface and a bed of coal tar concrete put down in three courses. This bed is 4 in. thick when finished. The specifications are that the stones of the lower course shall be not less than 1 in. in diameter and those of the second course not more than 1 in. in diameter. Stones of each course to be well covered with tar before laying and thoroughly rolled afterward. The finishing course to be composed of good clean sharp sand well dried, then heated hot and mixed with pitch and tar in the proper proportions. This is to be carefully rolled and brought to a true level to fit a straight edge. Roller to weigh not less than 700 pounds on a length not exceeding 22 in. On this finished surface of the foundation there is spread a coating ¼ in. thick of best roofing pitch put on hot, into which the lower course of plank is laid before it cools. Care must be taken to have the plank thoroughly bedded in the pitch, and after laying, the joints must be filled with pitch. If vacant places occur under plank they should be bored and filled. The finishing flooring is laid across the lower and thoroughly nailed. For the lower course 2½-in. spruce plank s. l. s. is used, and for the upper 1½-in. s. l. s. spruce plank. It is also noted that the lumber for the lower course should be fairly seasoned, and that of the upper course well seasoned before using. The cost of such a floor is given at 18 cents per square foot, using spruce lumber.

For paint shops and car shops a brick floor has been found very satisfactory.

Your committee believes that a brick floor, generally speaking, is the most economical, durable, and satisfactory floor for shops as well as for roundhouses.

### The New Station and Yards at Nashville.

A few weeks ago we noted the letting of a contract for a new union passenger station at Nashville, Tenn. This is the beginning of the execution of a plan for extensive improvements laid out in 1893, but postponed because of the hard times. The plan, Fig. 1, shows the proposed arrangement as revised this year. The track and buildings shown by solid lines constitute the portion of the work which will be done immediately, while the dotted lines indicate extensions which have not, as yet, been ordered built. The first work will be the building of the main station, the baggage, express and mail rooms and the train sheds, and the re-arrangement of the principal tracks. Later the new passenger car, freight and repair yards will be built, as well as new freight houses, a round house and a coaling station. The entire area covered by these improvements when finished will be about 70 acres. The new passenger station is a few hundred yards south of the present station.

The contract for the main station building and the building for express and baggage was let to Charles A. Moses of Chicago; that for the grading to Messrs. Foster & Creighton of Nashville, and the Louisville Bridge & Iron Co. will build the viaducts in Broad and Church streets. The plans were all made under the direction of Mr. R. Montfort, Chief Engineer of the Louisville & Nashville.

The arrangement of the principal tracks is indicated on the diagram, Fig. 1, by letters. A is the main southbound freight track, and F the main northbound freight track. Inside of these on each side are the main through passenger tracks; B southbound and D northbound. In the train shed track B is duplicated, as indicated by B and C, and track D is also doubled (D and E), making two main tracks for through trains in each direction. At the north end of the yard (Cedar street) the freight tracks run into the main passenger lines. G is a drill track.

The new station is expected to be the finest and most complete south of the Ohio River. The main

building will front on Broad street. This street is 100 ft. wide, and will be carried over the tracks on a viaduct 955 ft. long and the full width of the street. The main floor of the station is on the level of the street and is really the second floor, the first being at the platform level. The viaduct will be built with broad sidewalks and carry a double-track electric car line, the viaduct floor being 23 ft. above the railroad tracks. This will be a through station, with the main tracks passing along either side, but with stub tracks for trains to and from the south. The entrance to the station from Broad street will be through a porch 52 ft. 3 in. wide, extending from

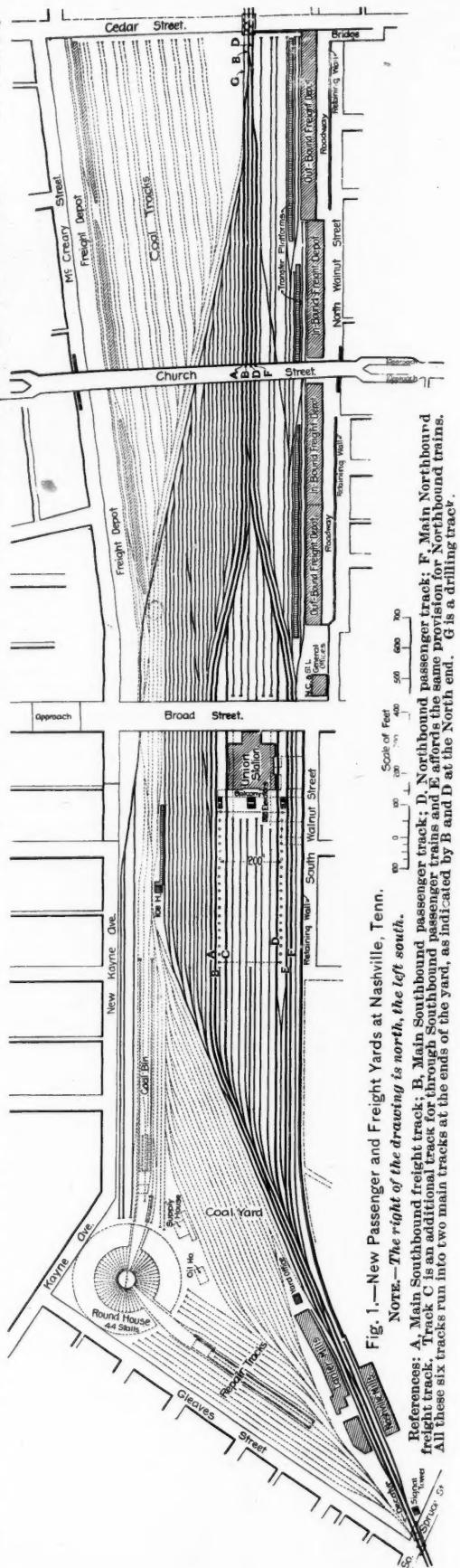


Fig. 1.—New Passenger and Freight Yards at Nashville, Tenn.

Note.—The right of the drawing is north, the left south.

References: A, Main Southbound freight track; B, Main Southbound passenger track; D, Northbound passenger track; F, Main Northbound freight track. Track C is an additional track for through Southbound passenger trains and E, an additional track for through Northbound passenger trains. All these six tracks run into two main tracks at the ends of the yard, as indicated by B and D at the North end, G is a drill track.

the street to the front of the building proper. This is shown by Fig. 2, which is the front elevation, and Fig. 3, which is a plan of the main floor.

On this floor (at the street level) will be the waiting rooms, dining and lunch rooms, ticket and minor offices, lavatories and elevator entrances. The main waiting room will be 100 ft. long, 51 ft. wide and 73 ft. high, with a dome ceiling of stained glass. At the rear this room opens upon a wide balcony, from which steps lead down to the platforms in the train shed. The three upper floors ranged around the main waiting room will be used for railroad offices.

The main building will be faced with Bowling



Green cut stone on all sides and will have a slate roof and towers at both the front and rear, which will be used for elevators and ventilating shafts, smokestack, etc. The interior will be finished in Southern pine, excepting the main waiting room, which will be finished in oak. All the walls and ceilings of this room will be handsomely frescoed, and all the waiting rooms will have marble wainscoting and tile floors. The heating will be done by hot air and the rooms will be ventilated by rotary fans. The heating and electric lighting apparatus will be in the basement, on a level with the tracks.

The baggage, mail and express building will be of Bowling Green cut stone, and extend along South Walnut street, adjoining the train shed. Elevators will be provided for lifting baggage from the lower platform to the street level. The train shed will have 10 tracks and will be 500 ft. long and 232 ft. wide. It will be built of steel trusses, each having a span of 200 ft. between column supports; the roof will be of slate. The specifications provide that the buildings shall be completed by Aug. 1, 1899, and they will cost approximately \$250,000.

#### Care of Bridges.

The committee to report on this topic to the Association of Superintendents of Bridges and Buildings consisted of Messrs. Greiner, Guppy, McIntyre, Kelly and Goodale. The complete title of their subject was "Care of Iron Bridges After Erection, Including the

bridge means something more than allowing it to remain in the condition in which it is found. The clogged up rollers must be taken out, new ones of a diameter not less than 4 or 5 inches inserted, after proper bedplates have been made for them to roll upon. End bottom lateral rods must be connected directly to the bolsters, so that when the bridge expands these rods will expand with it. The nuts on the "U" hangers must have particular attention, because if drawn too tight, the hangers are apt to break, as it is possible to adjust them so that the inside hanger will carry the entire panel load. If these hangers are rusted at the screw ends they must be replaced by new ones, because rusty threads are apt to strip.

The portals must be stiffened up so as to prevent the bridge from excessive distortion, which will always take place in this character of structure unless the portals are rigid. The eyebars which are loose should be made to work together, not merely by inserting separators between them and pushing the loose bars out of line, thereby giving a side pressure against the tight bar and increasing the strain which already exists in this bar, but by securely clamping to the tight bar an additional bar, which, together with the eyebar will make a sort of "T," capable of resisting the side pressure of the separators without bending the tight bar.

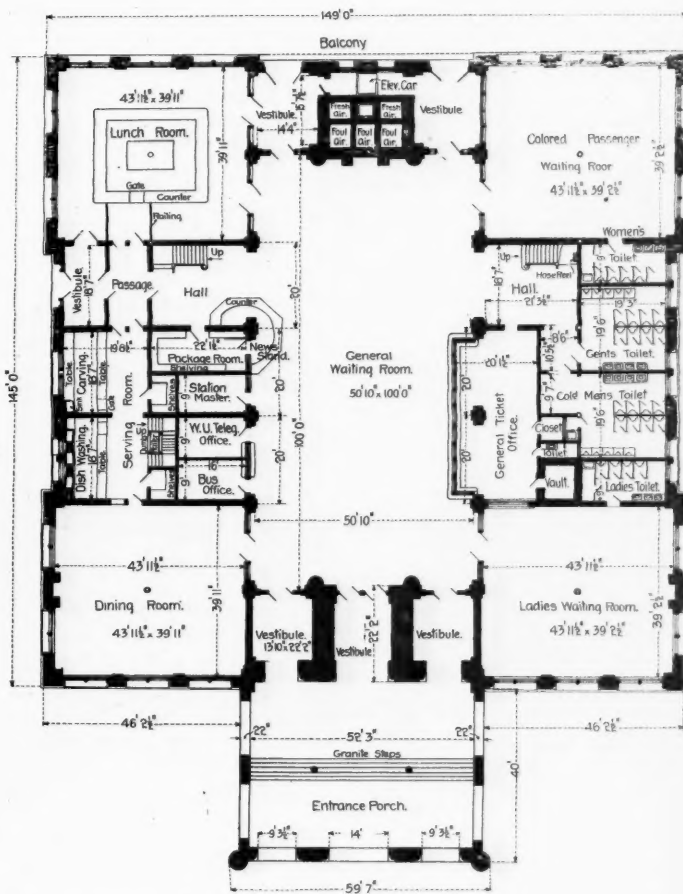
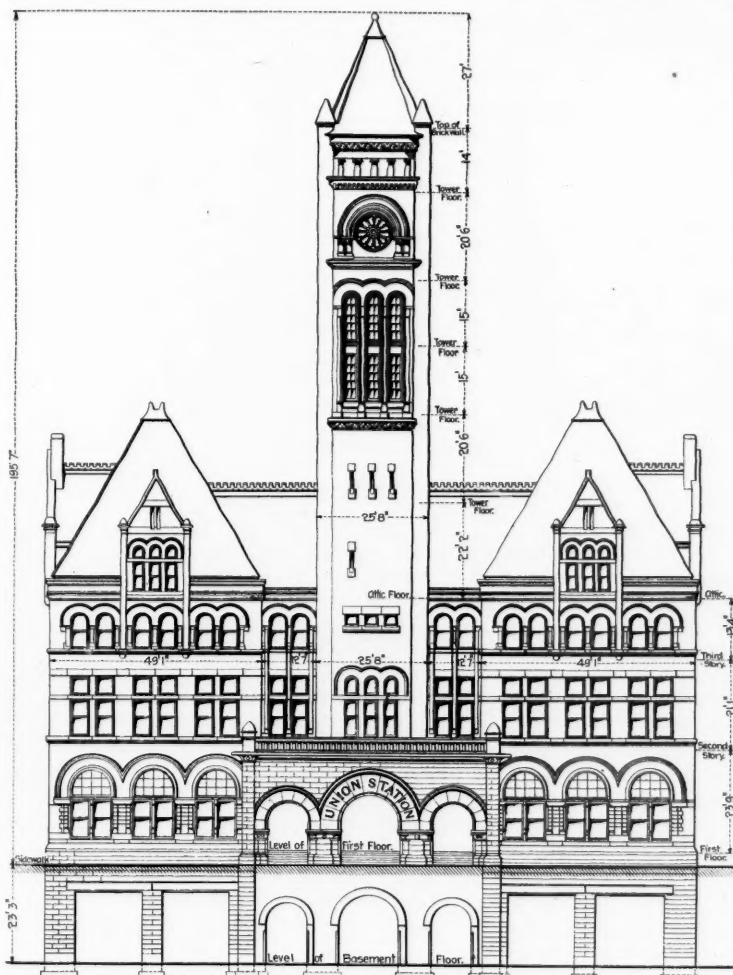
In addition to the above defects, pin holes will probably be elongated and the pins themselves cut into by the metal bearing against them on account of the bearing being too thin and the pins too small. When this becomes excessive it will mean new pins and reinforced bearings, a very expensive operation. After the bridge has been put in as good condition as possible, the care of it, as in a first-class bridge, will mean simply to keep it in that condition, and this can be done unless the railroad company increases the weights of engines to such an extent as

#### Investigation of Electrolysis at Dayton, O.

A very thorough investigation of the damage by electrolysis in the water mains of Dayton, O., was made last spring. The trustees of the City Water Works called as experts the following: Harold P. Brown, Electrical Engineer, New York; E. E. Brownell, Electrical Engineer, Dayton, O.; J. H. Shaffer and J. O. Handy, Metallurgist and Chief Chemist, respectively, at the Pittsburgh Testing Laboratory, Pittsburgh, Pa., and Charles E. Rowe, Secretary of Water Works, Dayton, O. Their report has been published and forms one of the most complete discussions of this subject that has ever been printed. Of these reports, Mr. Brown's was the most important in many respects, and to be able to present it in a condensed form we have asked him to give us the main points discussed, which are contained in the following statements:

(1) The area in which the pipes are positive to the rail, and therefore suffering injury, runs fully half a mile to the west of the power houses on the left side of the Great Miami River, and for a mile to the east. This area is ordinarily confined to a radius of a quarter of a mile from each power house.

(2) The cast-iron pipes in the district just mentioned seem upon examination to be in excellent condition, since the coating when first exposed is black and even, and could easily be mistaken for the black paint ordinarily applied to the pipes. But on close examination it is found that the paint has entirely disappeared and the soft, black coating is a part of the pipe itself, but can easily be scraped off with a knife. On exposure to the air this black coating



Figs. 2 and 3.—New Union Passenger Station at Nashville, Tenn.

Louisville & Nashville Railroad and Nashville, Chattanooga & St. Louis Railway.

Best Method of Protecting Them from Salt Water Drippings from Refrigerator Cars." Extracts from the report follow:

Many of us, when we take up our positions as engineers, superintendents or supervisors of bridges, have turned over to us a number of old structures which were never properly designed in the first place, the material in which is of an uncertain quality owing to lack of inspection, and the shop work on which was done in a bungling and abusive manner, to say nothing of the damage done by a rough gang of erectors. These are the bridges which call for a display of ingenuity of those who take care of them, because frequently, in addition to their abominable design and faulty construction, they are carrying much heavier loads than were ever expected at the time of their construction. Frequently, in cases of truss bridges, the floor beams will be hung to the bottom chord pins by means of "U" hangers, one taking hold of each side of the post. All lateral rods will be adjustable, and the end rods, as likely as not, will be attached to the masonry instead of to the end bolsters. Bolsters will be cast-iron without any expansion rollers, or, if they ever had expansion rollers, the rollers will be flattened out and so rusted as to be of no account. The counter rods in the center panel, which should have been adjustable, are probably without adjustment and very loose, and the eyebars in bottom chords and main ties do not pull together; that is, there will be one or more bars in each panel which take little or no strain, there will be very weak portals and weak connections throughout the structure. The care of this kind of

to endanger the structure, in which case shoring must be resorted to until a new bridge is built or the old bridge reinforced to carry the increased weight of traffic.

The care of new plate girder bridges of modern design involves less actual labor than any other class of bridge work, but there are many plate girders which are of defective construction carrying trains to-day. Their webs may be  $\frac{1}{4}$  in. thick, rolled in short lengths and spliced together by an insufficient number of rivets and not sufficiently stiffened against buckling. Their flanges may be composed of light flange angles, to which are riveted heavy cover plates, and the transferring of the strain of the flange angles through the webs is done by rivets made  $\frac{1}{4}$  in. in diameter and spaced at such a distance apart as to subject them to the danger of shearing off. The care of such a bridge is a serious question, as there is no good way to strengthen it. It should be treasured and renewed as soon as possible.

The question of best method of protecting bridges from injury by salt water drippings is one upon which little can be said. That this dripping is very injurious to metal none will question, except, perhaps, the owners of refrigerator cars. Some little interest is being taken in this subject by the officials in charge of track and bridges, but little or none by those in charge of the transportation departments, and while the remedy should be applied to the cars instead of the bridges, there will undoubtedly be opposition to this method by the car owners, who will probably be very slow to provide their cars with the necessary protection unless forced to do so by the railroad companies' united action.

gradually turns to the ordinary color of iron rust, but retains its light and spongy character.

(3) The salts and alkalis of the soil seem to form a solvent for both iron and lead in presence of the electrical current, since the stones surrounding the pipes in the district above mentioned are actually electro-plated with the metal from the pipes. This condition has never been reported elsewhere to my knowledge.

(4) In the attempt to check electrolysis the roads have put in a great number of Falk cast-welded joints, replacing ordinary joints, which were previously bonded with No. 00 wire. Measurements were taken in February last along Third street, from the bridge to St. Clair street, before the cast-weld was applied. After the rails on this same street were cast-welded my examinations were made, and my readings were practically the same as those made in February, the only variation being that due to the increased summer traffic. The rail ends had been cleaned with a sand blast before the cast-welding was applied, and I am informed that the work was done by one of the experts of the company. Mechanically considered, the joints are magnificent, but their electrical conductivity is very low.

(5) The unusual conductivity of the soil, which shows indications of the current for 15 to 20 ft. from the rails and pipes, may be either alkaline matter contained in the soil itself or derived from leaks in the natural gas or artificial gas pipes. If the latter is determined by chemical analysis to be due to gas leakage, a very interesting legal question will be raised concerning the responsibility for the damage. Since a casual inspection of the cast-iron pipes



would have led to a report that they were in good condition, the same state of affairs might exist in other cities.

The Dayton conditions are so unusual that no method of electrolysis prevention heretofore suggested would be efficient.

The third consideration by Mr. Brown is one of the most interesting points that has come up, and subsequent investigation has shown that the same condition has been observed elsewhere. An example of this is stated by the Engineer and Superintendent of the Peoria Water Works Co., who observed as far back as 1894 that the earth and stones near the pipes in that city appeared to be electro-plated. On this point Prof. D. C. Jackson, of the University of Wisconsin, writes to the Engineering News referring to the discussion on this subject before the Western Society of Engineers on July 11, 1894, and published in the Journal of the Association of Engineering Societies for September, 1894. In a word, he states that such electrolytic corrosion is a direct electrolytic action, and the metal from the pipes and track is carried to the surrounding soil and the deposits made are from the metal of the pipes themselves.

Regarding the fourth consideration, it should be stated that exception to Mr. Brown's statement has been made by those whose experience led them to believe that the cast joint is electrically, as well as mechanically, perfect. It is unnecessary to review the discussions on this point which have been published. It may be well, however, to give the tabulated results of four tests which show practically no drop for 100 amperes. These tests were made on Dec. 17, 1897, by the Chicago Electric Transit Company. One joint was selected from the scrap pile and the rail used was a 4½-in. 56-lb. girder section. The joint was made in the track in 1895, and at the time of the test was badly worn. The readings were taken at five second intervals for 1½ minutes, when the temperature of the rails during the tests was 80° F. The following tests, as reported at the time in the Street Railway Review, were made by Mr. J. R. Chapman, Electrician of the North Chicago City road:

Test No.	Average Amperes Flowing.	Drop in 5 ft. with Joint, Volts.	Drop in 5 ft. with out Joint, Volts.	Drop in 100 Amp. Volts per Foot.
1	502.6	...	.047	.00935
2	508.9	.048	...	.00943
3	735.8	.065	...	.00883
4	758.4	...	.069	.00910

#### Roundhouse Ventilation.

The committee to report on the subject of roundhouse smokejacks and ventilation to the Association of Superintendents of Bridges and Buildings consisted of Messrs. G. W. Andrews, W. O. Eggleston, A. S. Markley, R. J. Howell, J. T. Carpenter and A. McNab. An abstract of the report of this committee follows:

In roundhouses the principal difficulty to overcome is the quick disposal of gases generated by the locomotives. This your committee has endeavored to facilitate to a large extent by inquiries during the past year, the result of which they now place before you.

The chief agent in roundhouse ventilation is the smoke-jack, and one which in many cases is not very carefully looked after, the result being unhealthy employees, corroded iron in roof trusses, leaky roofs, etc.

It is evident to your committee that there is a great diversity of opinion as to the best style of jack to be used, the opinions in many cases running counter to each other.

Your committee will not undertake to unravel the mystery, but submit a number of sketches of various styles of smoke-jacks and ventilators, with an appendix giving the views of a number of gentlemen who were kind enough to favor your committee with their views.

We submit drawings which so completely explain themselves as to need but little additional explanation on the part of your committee, as follows:

Wooden smoke-jacks and ventilators as follows: Circular jacks as used by C. & E. I. R.R.; Pickering smoke-jacks; Chicago & Erie smoke-jacks, identical with Pickering; Chicago & Erie ventilator or Dorner; wooden monitor of Fitchburg R.R. Metal jacks: Telescope jack as used by B. & O. R.R.; Scott ventilator with smoke-jack and both drop and stationary funnel; Roe ventilator with smokestack and drop hood; Pan-coast metal ventilator, made in both cast and sheet iron, stoneware or terra cotta.

The expanded metal and cement smoke-jacks:

Of the various statements in appendix your committee call particular attention to Mr. A. S. Markley's statement in reference to painting and sanding the inside of wooden smoke-jacks, wherein he states that painting and sanding have been dispensed with to their satisfaction. This seems much at variance with general practice.

We would also call attention to the statement of Mr. F. O. Melcher, chief engineer of the Fitchburg R.R., in reference to wooden monitor and the lack of complaint from cold air through same. This, in the opinion of many, removes the greatest objection to this method of ventilation and we deem it worthy of your consideration.

#### Appendix.

Mr. G. C. Dunne, Manager Portland Stoneware Co., 42 Oliver street, Boston, calls attention to smoke-jacks made of vitrified glazed stoneware. "These jacks we have been making for about 30 years, though we have never patented them, and we have furnished large numbers to the leading railroads. They are made from a special composition of fire clays, and are salt glazed, making them indestructible. All the railroads in New England have used and are now using them on every new roundhouse they built. The Pennsylvania R.R. and the New York Central R.R. have used a very large number, as have also a great many railroads in the South and West, and we have yet to hear of a single case where they have been injured or destroyed, except in a few cases where the wind guard on the top has become detached and was broken in falling."

Mr. W. B. Yearance (West Shore) says:

"We have had much trouble with the few terra cotta smoke-jacks we have had, and now use the Roe cast-iron jack, with bonnet and adjustable smokestack hood. These are much lighter on the roof than terra cotta, and give us good satisfaction. Of course, they cost more than a wooden jack, but make a permanent and, in our experience, a satisfactory job."

Mr. W. M. Noon (Duluth, South Shore & Atlantic) says:

"We use principally sheet iron jacks of the simplest design, and made in our own shops. They are not very durable, as the gases eat them out in a few years. We have some earthenware jacks made in Portland, Me. These jacks have been in use about 15 years, and are still in good condition, and, barring accidents, will last many years. We used a few cast-iron jacks, but found them no more satisfactory than the sheet iron, and have therefore abandoned the use of cast iron."

Mr. F. O. Melcher (Fitchburg Railroad) says: "The Fitchburg Railroad Co. has used up to date, steel or iron smokestacks, for this purpose, one being placed over the point where the stack of the locomotive would ordinarily stand. The top of the jack was covered with Akron pipe chimney, with suitable top for keeping out the rain. These gave very poor service and are expensive. Under ordinary conditions one would be required for each pit every year. Some last longer. These cost now \$32 apiece, without considering painting or erection. These latter items would probably add \$10, including cost of taking down old jack. In view of the unsatisfactory performance of these sheet iron jacks, we have attempted to get rid of them by substituting in their place a monitor, extending lengthwise over the pit, and of sufficient length to cover whole of both the smokestacks and the steam dome."

Mr. A. S. Markley (Chicago & Eastern Illinois) says: "In 1894 the C. & E. I. R.R. put cast-iron outside smoke-jacks with inside cast-iron drop hoods in their Thirty-third street roundhouse, Chicago, manufactured by the Railway Supply Co. These jacks were ¼-in. cast-iron, in sections of 4 ft., of which there were three on outside. Complete, these jacks cost \$46 for material, and an additional cost of \$7 each to put in place. Three years after they were put up they began to deteriorate at the joints. All of these cast-iron jacks had to be replaced on the outside in 1896, on account of their deterioration. On the inside the deterioration had not been so rapid. In a number of our roundhouses No. 8 iron was used for jacks, both inside and out, which only lasts from two to four years. When the cast-iron jacks on outside of roundhouse at Thirty-third street were renewed, in 1896, wooden ones were put on ¼-in. white pine, jointed joints, well made, 20 in. in diameter, 12 ft. long, five bands ½-in. round iron, with wrought iron cap, at cost of \$8.40 each complete in place, while this part of cast-iron cost for material \$15.40 plus \$3 for labor erecting. The inside jacks made in same manner, except 4 ft. diameter at bottom, 10½ ft. long, 4½-in. round iron bands in both cases. All staves were doweled with wooden dowels 2½ in. apart. Cost of making and material, \$7.38. Hanging, each, \$1.81. Total, \$8.69, or \$8.28 per lineal foot. The material for inside telescope jacks cost \$23.00, plus \$4 each for placing. We have now several stalls equipped outside and 39 inside with wooden jacks. Have had some of them up for two years; from recent examination made there is not the slightest depreciation in their durability noticed so far. The outside and first we put up were painted and sanded two coats inside with two coats mineral paint. All the inside ones, except two, that have been put up, have dispensed with painting or sanding altogether, which is just as well and answers the same purpose in every particular."

Mr. W. O. Eggleston (Chicago & Erie) says: "My opinion is that the wood jacks or the dormer windows are much better than any metal smoke-jacks now in use. These jacks are light and economical, and cost from \$8 to \$24 each in place, according to style and conditions of roof of house."

A. B. & O. Superintendent says: "Prior to 1894 we used on our roundhouses a smoke-jack 22½ in. in diameter, made of 16-lb. galvanized iron. The cost of this jack in place was about \$25. The only objection to it was its lasting qualities, its average life being about five years. We are now using a cast-iron jack with a telescope device. We have them both on the Cumberland and Riverside roundhouses. They weigh about 3,000 lbs., and cost in place about \$71.50. In regard to the merits of the jack, my own opinion is that the telescope arrangement is a snare and delusion. The liability to accident is the great objection. I believe the substitution of the cast-iron jack is a move in the right direction, because of its more lasting qualities, and if the telescope device was left off, thereby cheapening the cost, these jacks would be very desirable and hard to improve upon, either in appearance, proportion, effectiveness or lasting qualities."

Mr. W. G. Berg and Mr. W. E. Harwig (Lehigh Valley) say:

"I enclose circular of the Scott ventilator and smoke-jack, which is in use on the L. V. R.R. at present. This form of smoke-jack has been put in in all roundhouses of the road built within the last few years. It was also put in the old Packerton roundhouses some years ago, when the old system (with horizontal tubes connecting with a brick stack) was completely destroyed by the action of the gases, and which horizontal system, by the bye, never worked satisfactorily. The jacks are furnished for \$43, delivered, and the cost of putting in." Mr. Harwig says, "is about \$10. They, apparently, give good satisfaction, and the feature of being able to let the hood down on top of the engine stack is a good one, provided, when the engine is moved out of the house, some one does not blunder and forget to pull up the hood."

#### Steam Heating of Buildings.

In our issue of Sept. 30, we referred to the paper on "Heating Large Station and Shop Buildings," read at the September meeting of the Western Railway Club, by Mr. G. W. Scott, of the Pullman Co. Mr. Scott recommended the low-pressure return system of steam heating, using the exhaust from the engines and pumps and maintaining the circulation through the heating system by a vacuum pump. He stated that workshops and other buildings may be maintained at a temperature of about 70° Fahr. in zero weather, when the steam supply is equal to one boiler horse-power, or 34½ lbs. of steam per hour for each 100 superficial feet of piping or radiation; and that this amount of radiation is sufficient for heating 10,000 cu. ft. of air within the room. The saving effected by using the exhaust steam from a 200 h. p. engine for heating, in place of live steam, is about \$1 per hour where coal is worth \$2 per ton delivered at the boilers. In addition to this saving in fuel, the water of condensation is returned to the boilers practically pure and at a temperature slightly below the boiling point, and while some fresh water will need to be added to make up for losses, still the relative volume of the returned water is such that the scale-forming elements in the water added are materially diluted. The cost of the installation and maintenance of the low-pressure system of heating is also less than that of the high-pressure system.

Mr. B. W. Thurtell, of A. Metz & Co., stated that most of the failures of the low-pressure system of steam heating were due to poor engineering and improper installation. As showing what good results could be obtained, he stated that last winter he was in a building where the temperature of the returned water was 211° Fahr. and the vacuum in the air valves was about 15 in. He said: "Such results were not obtained by guesswork. In the first place, there was taken into consideration the number of windows, and it was considered necessary to provide 1 sq. ft. of radiating surface for every 2 sq. ft. of window surface; to this was added 1 sq. ft. of radiating surface for every 20 sq. ft. of wall surface, and 1 sq. ft. of radiating surface for every 200 cu. ft. of space to be heated; the sum of these three items gave the total radiating surface to be provided, and will be found sufficient to heat the space to a temperature of from 70° to 72° Fahr. After obtaining the amount of radiating surface required, the next thing is to obtain the size of the main. For low pressure work, divide the number of square feet of radiating surface by 100 and extract the square root of the quotient, and the result will be the approximate diameter of the main required. I have never seen a failure where the piping was arranged according to the above rule. Of course the location should be considered, but the results are satisfactory for conditions met with about Chicago. The pipe leading from the main to a riser should be one size larger than the riser, the better to provide for the condensation returning to the tank and to prevent hammer blows."

Mr. J. W. Luttrell, Master Mechanic of the Illinois Central at the Burnside shops, said that at that point they used the Sturtevant hot air system, the exhaust steam from the various engines being carried through heating pipes, around which cold air is drawn and heated and then distributed through the shops by overhead pipes. He said: "The exhaust steam, after it passes through the pipes and condenses, is carried back to the boilers by automatic pumps. This water is first deposited in a hot water heater, from there into the force pumps, from the force pumps back to the second hot water heater, and from there into the boilers. By a test we found that the water was going into the boilers at about 40° Fahr. below the boiling point. Since putting in this system and carrying back all condensation to the boilers we have found that we accomplish a saving of 0.8 ton of coal per hour. We have over-pressure valves in the exhaust pipe to take care of pressure when it gets above a certain point. We find no difficulty in taking care of exhaust steam, except in extremely warm weather. We find that the water supply for our boilers is supplied by the condensed exhaust steam, plus about 8 per cent. more, which is drawn from our tank supply, our only loss in water being from trying gauge cocks and blowing whistles."

#### A Schenectady Mogul for the New York Central.

The engraving, from a photograph, shows the general appearance of a 20 in. x 28 in. mogul recently built by the Schenectady Locomotive Works for the New York Central & Hudson River Railroad. The engine was built from specifications prepared under the supervision of Mr. William Buchanan, Superintendent of Motive Power and Rolling Stock. The dimensions and other particulars of the engine are given at length in the table below. Another table

N. Y. C. Mogul—Data Taken on Run of Oct. 12.

Card No.	Miles per hour.	Grade in feet per mile.	Horse-power, Both sides.	Steam pressure, Pounds.	Throttle lever.*	Reverse lever.*
79	3.	23.8	258.	180	6	3
115	6.75	With helper. Level.	449.50	173	9	15
113	7.	17.2	515.50	178	13	13
88	7.75	17.1	514.0	172	10	15
89	11.	4.4	657.0	178	10	17
117	12.25	14.5	614.50	172	10	18
100	14.5	25.9	770.0	170	14	16
110	15.	17.2	774.0	180	13	17
104	15.25	3.4	755.50	174	8	13
94	16.5	4.6	659.50	175	10	19
91	17.5	4.4	717.0	178	10	19
95	18.31	Level.	687.0	172	10	19
153	18.5	10.	702.0	180	12	17
98	19.25	10.	815.50	172	10	17
143	20.75	10.	690.0	170	9	30
92	22.	4.4	767.50	175	10	19
134	27.	Down. 2.	703.0	165	8	19
132	28.	Down. 3.7	719.0	170	10	17
133	29.75	Down. 16.9	703.0	170	8	19

\* Note.—Throttle closed at notch No. 1; wide open at notch No. 20. The reverse lever, extreme forward position at notch No. 1; extreme back position at notch No. 51.

gives particulars of seven different runs made from Sept. 28 to Oct. 12, between West Albany and DeWitt, a distance of 139 miles. The heaviest trains noted in that table are 81 loaded grain cars and a caboose, eastbound, and 126 light cars and one loaded car, westbound.

Another table gives data of indicator cards taken



on the run made Oct. 12 with 81 loaded cars and a caboose, the total train weight being 3,428 tons. Several characteristic cards, taken during that run, are reproduced. The card number of each, as given, corresponds to the card number in the table. It will be observed that this engine has made some remarkable performances, the fuel consumption, in particular, being very low. The train hauled on the occasion when the indicator cards were taken consumed 12.9 pounds of water per car each mile. The equivalent evaporation per pound of combustible from and at 212° was but 9.45, and the refuse from the average of previous tests was 12 per cent. The test of the engine was made under the supervision of a representative of the railroad, who kept a careful record of the coal and water consumed. The tank was fitted with a graduated water glass and thermometer, which were read before and after each filling of the tank. From these readings the amount and temperature of water used on the trip were determined. The engine was run under ordinary conditions and handled by regular engine crews.

Schenectady Mogul Locomotive for the New York Central, No. 786.

General Dimensions.  
Gage ..... 4 ft. 8 1/2 in.  
Fuel tank ..... Bituminous coal  
Weight in working order ..... 142,200 lbs.  
on drivers ..... 123,000 lbs.  
Wheel base, driving ..... 15 ft. 2 in.  
" " rigid ..... 15 ft. 2 in.  
" " total ..... 23 ft. 3 in.

Cylinders.  
Diam. of cylinders ..... 20 in.  
Stroke of piston ..... 28 in.  
Horizontal thickness of piston ..... 4 1/2 in. and 5 in.  
Diam. of piston rod ..... 3 3/4 in.  
Kind " " packing ..... Cast-iron  
" " " rod packing ..... United States  
Size of steam ports ..... 18 in. x 1 1/4 in.  
" " exhaust ..... 18 in. x 2 3/4 in.  
" " bridges ..... 1 1/2 in.

Valves.  
Kind of slide valves ..... American balanced  
Greatest travel of slide valves ..... 5 1/2 in.  
Outside lap " " ..... 3/8 in.  
Inside " " ..... 3/8 in.  
Lead of valves in full gear ..... 0 in. 1/8 in. lap front and back  
Kind of valve stem packing ..... United States

Wheels, Etc.  
Diam. of drivers outside of tire ..... 57 in.  
Mat'l " " centers ..... Main, cast steel;  
front and back, steeled cast iron

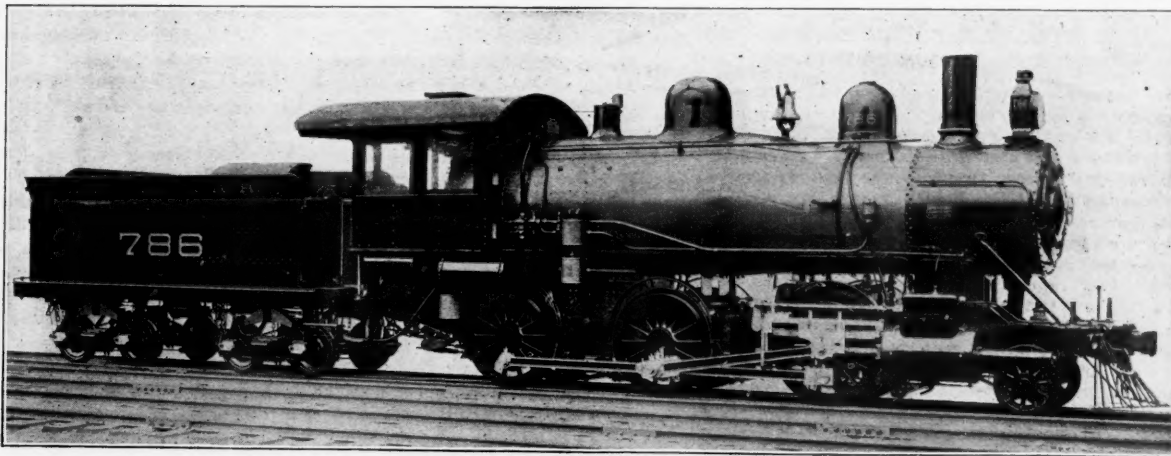
Tire held by ..... Shrinkage  
Driving box material ..... Gun iron  
Diam. and length of driving journals ..... 9 in. dia. x 12 in.  
" " " " main crank pin journals—  
(Main side, 6 1/4 in. dia. x 5 1/4 in.)  
" " " " side rod crank pin journals—  
Front, 5 in. dia. x 3 3/4 in.;  
back, 5 in. dia. x 3 3/4 in.

Engine truck, kind ..... 2-wheel swing bolster  
journals ..... 6 1/4 in. dia. x 10 in.  
Diam. of engine truck wheels ..... 30 in.  
Kind ..... Krupp steel-tired cast-iron, spoke center

Boiler.  
Style ..... Extended wagon top

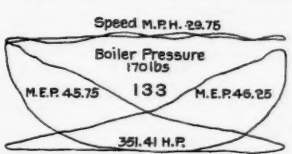
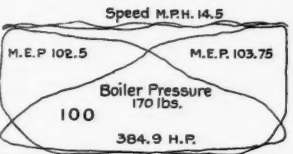
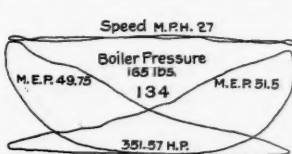
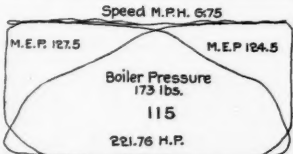
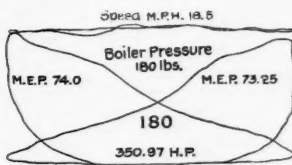
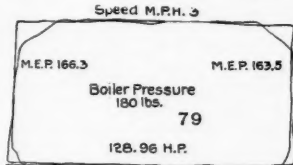
Outside diam. of first ring ..... 62 in.  
Working pressure ..... 180 lbs.  
Mat'l of barrel and outside of firebox ..... Carbon steel  
Thickness of plates in barrel and outside of firebox—  
1 1/8 in., 1/2 in., 1/2 in., 1/2 in. and 1 1/8 in.

Firebox, staybolts ..... 1 in. diam.  
Tubes, material ..... Charcoal iron  
" number of ..... 2 in.  
" diameter ..... 12 ft. 0 in.  
" length over tube sheets ..... 12 ft. 0 in.  
Heating surface, tubes ..... 1,934.24 sq. ft.  
firebox ..... 176.6 sq. ft.  
" " total ..... 2,110.84 sq. ft.



A 20 x 28 in. Mogul for the New York Central.  
Built by the SCHENECTADY LOCOMOTIVE WORKS, Schenectady, New York.

Grate surface ..... 30.3 sq. ft.  
style ..... Ro. king  
Ashpan ..... Sectional, with dampers front and back  
Exhaust pipes ..... Double, high  
nozzles ..... 3 1/4 in., 3 1/2 in. and 3 3/4 in. dia.  
Smokestack, inside diameter ..... 16 1/2 in.  
top above rail ..... 14 ft. 8 in.  
Boiler supplied by—Two N. & Co. Monitor No. 10  
jectors, I. R. & I. L.



Diam. of Drivers, 57 in.  
Valve Travel, 5 1/2 in.  
Sims' Indicator Cards from the Schenectady Mogul for the New York Central.

Tender.  
Weight, empty ..... 38,700 lbs.  
Wheels, number of ..... 8  
Journals, diameter ..... 30 in.  
and length ..... 4 1/2 in. dia. x 3 in.  
Wheel base ..... 15 ft. 10 1/2 in.

The Purchase and Inspection of Railroad Supplies.

The Purchasing Agent is not, like an executive officer of a road, practically independent in his actions and at liberty to follow out his own ideas irrespective

of those of his fellow officials, but as their agent, he must familiarize himself with their needs and endeavor to supply them. He should always be in close touch with the different heads of departments. The Purchasing Agent should be something more than a mere price clerk and medium of communication between the Chief Engineer or Superintendent of Motive Power and the dealer or manufacturer; he should, before he is competent to hold this responsible position, become familiar with the different classes of supplies used in all departments, the service required of them and the peculiar uses to which they are to be put. He should, furthermore, post himself as to the different kinds and qualities of railroad supplies on the market, with which object some study of the processes of manufacture at the mills and factories is of great advantage, so that he may be able to select his supplies with some judgment, and not make the selection depend solely on price—frequently a very expensive practice in the long run.

The Economy of the Best.

I am so firmly convinced of the ultimate, if not initial economy of buying only the best quality of material, that I have prepared this paper with the object of advocating this policy, which I realize is not followed by all purchasing agents, who are sometimes so situated that they are forced to buy the cheapest goods offered them, in order to make a favorable comparative showing for their department, and at other times are forced to do so from having

Details of Seven Runs Between West Albany and De Witt.

Date.	Sept. 28.	Sept. 29.	Sept. 30.	Oct. 1.	Oct. 3.	Oct. 4.	Oct. 12.
Terminal points	W. A. to D. W.	D. W. to W. A.	W. A. to D. W.	D. W. to W. A.	W. A. to D. W.	D. W. to W. A.	D. W. to W. A.
Weather	Fair.	Fair.	Fair.	Fair.	Fair.	Fair and showery.	Rainy and fair.
Condition of rail	Good.	Good.	Good.	Good.	Good.	Good and slippery.	Slippery and good.
Velocity of wind	Heavy head 50 mile.	Trace.	Trace.	Trace.	Trace.	Trace.	Light and favorable.
Temperature atmosphere	63	61.6	65.7	68.1	67.5	72	61
Temperature feed water	177	177.5	178.5	178.5	179	179.5	178 and 179.
Steam pressure	10 hr. 12 min.	10 hr. 57 min.	10 hr. 24 min.	12 hr. 5 min.	11 hr. 31 min.	12 hr. 3 min.	12 hr. 49 min.
Elapsed time	5	6	5	8	6	6	9 min.
Detentions, number of	9 hr. 10 min.	9 hr. 6 min.	8 hr. 55 min.	10 hr. 3 min.	9 hr. 49 min.	9 hr. 53 min.	12 hr. 38 min. 15 sec.
Running time	15.17	15.27	15.62	13.83	14.2	14.04	13
Average speed, miles per hour	91 Lt. 1 load.	1 Lt. 1 load.	112 Lt. 1 load.	1 Lt. 81 load.	126 Lt. 1 load.	1 Lt. 85 load.	81 loaded and caboose.
Number cars in train	1,441	2,838	1,639	3,063	1,834	3,250	3,428
Loaded weight train, tons	200,299	394,482	227,821	425,757	254,926	451,750	476,492
Number tons hauled 1 mile	13,781.6	14,188.2	15,017.8	16,433	16,839.8	17,804.8	18,575.2
Gallons water used, actual	114,813.6	118,235	125,156.3	136,941	140,351.7	148,373.3	154,793.3
Pounds water used, actual	110,846	114,033	122,956.3	132,541	136,131.7	144,173.3	147,975
Pounds water used in run	17,050	18,880	18,280	18,300	20,200	21,120	22,190
Pounds coal used, actual	16,480	15,780	17,680	17,700	19,600	20,520	21,250
Pounds coal used in run	1.20	1.52	1.13	1.55	1.11	1.71	1.86
Pounds coal per car per mile	8.2	3.87	7.7	4.1	7.7	4.5	4.45
Coal consumed per 100 tons hauled 1 mile	12.1	25.8	12.8	24	12.8	22	22.4
Tons hauled 1 mile per pound coal	1.81	3.46	1.88	3.21	1.88	3.13	3.2
Tons hauled 1 mile per pound water	6.72	7.00	6.84	7.48	6.95	7.00	6.97
Average evaporation per pound coal, actual	7.86	8.19	8.00	8.75	8.13	8.19	8.32
Equivalent evaporation from and at 212° per pound coal	1.5 in coal as weighed.						
Per cent. moisture	8.28						
Equivalent evaporation per pound dry coal, average	965.7						
Factor of evaporation							

Horizontal seams—  
Butt joint, sextuple riveted, with welt strip inside and outside.  
Circumferential seams ..... Double riveted  
Firebox, length ..... 108 in.  
" width ..... 40 1/2 in.  
" depth ..... Front, 78 1/2 in.; back, 66 1/2 in.  
" material ..... Carbon steel  
plates, thickness—Sides, 3/8 in.; back, 1/2 in.; crown, 1/2 in.; tube sheet, 1/2 in.  
" water space—  
Front, 4 in.; sides, 3 1/2 in.; back 2 1/2 in.  
" crown staying ..... Radial stays, 1 in. diam.

Tender frame ..... 6 1/2 in. x 4 in. x 3/4 in., angle iron  
trucks—4-wheel, wood bolster, side bearing front and back, N. Y. C. style  
Water capacity ..... 4,500 U. S. gals.  
Coal ..... 10 tons  
Total wheel base of engine and tender ..... 50 ft. 4 1/2 in.  
Engine equipped with American brake on all drivers, operated by air.  
Westinghouse aut. air brake on tender and for train;  
9 1/2 in. air pump.  
2 3/4 in. consolidated muffled safety valves—  
 Gould coupler at front of engine and rear of tender.  
1 1/8 in. round case headlight.

no data to guide them other than the prices of different bidders, their only excuse for paying a higher price being the superior quality, of which many purchasing agents have no means of satisfying them—  
(Continued on page 781.)

\*Extracts from a paper by H. B. Hodges, Purchasing Agent and Superintendent of Tests, Long Island Railroad, presented at the meeting of the New York Railroad Club Oct. 20.





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#### EDITORIAL ANNOUNCEMENTS.

**Contributions.**—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussion of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

**Advertisements.**—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially either for money or in consideration of advertising patronage.

Little information which has not already appeared was brought out by the discussion, at the September meeting of the Western Railway Club, of the subject of running locomotives long distances. Probably this was due to the fact that the extension of locomotive runs is a problem requiring a different solution for each road, and because it is now generally conceded that locomotive runs should be as long as the local conditions will permit. Some idea, however, of the progress made by different roads is got from the remarks of some of the speakers, but it is a notable fact that on no one road have all the means been tried for keeping the locomotives in service a greater part of the time. Thus Mr. John Mackenzie, Superintendent of Motive Power of the New York, Chicago & St. Louis, has given much attention to the question of washing out boilers, with the result that on that road the locomotive boilers are washed out but once for every 8,000 miles; this result is accomplished by the systematic use of the blow-off cocks. On other roads, where the coal is bad, the main difficulty in the way of long runs has been the condition of the fire above the grates and the filling up of the ash pan. In this connection Mr. J. F. Deems, of the Chicago, Burlington & Quincy, referred to a passenger run on that road where the engine made 350 miles with no trouble from the fire becoming dirty. Mr. Rhodes stated that he was of the opinion that with care in designing the firebox and ash pan there should be no trouble in running from 250 to 300 miles. And by providing means for cleaning the ash pans at stations and facilities for taking coal and water along the main line of the road, he considered that the distance which a locomotive could be run continuously was probably limited only by the washing out of the boiler, which Mr. Mackenzie had shown could be done less frequently than is now the common practice; and by the endurance of the men.

#### Limiting Dimensions of Car Bolsters.

The strength of car body bolsters and the bad effects due to their deflection so as to bring the side bearings in contact have recently become very live topics for discussion. This discussion has so far brought out many opinions, and we are led to believe that some statements, which were intended to apply to old cars only, have been misconstrued and have created a wrong impression as to the strength of the metal bolsters which are now being generally used with new cars.

The discussion has had the effect of prompting one road, at least, to undertake a series of tests with a dynamometer car to determine what difference there may be in the train resistance on account of the side bearings being in contact. Should these tests be carried to completion, the results will give some definite information on the subject, and until something of this kind is done no accurate predictions as to the losses due to this cause can be made.

Assuming, however, that it is going to be worth a good deal of effort to prevent excessive friction at the side bearings, it may not be out of place to consider some of the conditions limiting the dimensions and strength of car bolsters; for evidently it will be desirable to take the load off the side bearings, if possible, by rigid bolsters, which transmit all the load through the center plates.

Any deflection which may take place in either the body or truck bolster has the effect of decreasing the distance between the side bearings. It is generally conceded, however, that the metal truck bolsters now in use have sufficient stiffness, but should greater strength be required for larger capacity cars, there is nothing to prevent a truck bolster being made of still greater depth, so that there is no trouble to be expected in designing such a bolster for any car that is likely to be built. In the case of the body bolster the room available is limited, excepting with hopper bottom cars, where there is ample space under the hopper for any increase needed in the depth of the bolster. The only questions, therefore, are whether in designing new flat bottom cars of large capacity sufficient vertical space can be provided for a body bolster which will not deflect, and also whether the old cars now in service can be

Should some simple and efficient form of frictionless side bearing be devised, its use to relieve a weak bolster could at the best only be considered as a make-shift arrangement. The proper function of such a bearing would be to permit the trucks to turn more easily on curves at such times as the load might be unequally distributed on either side of the center. Under normal conditions the load should be borne by the center plates.

It seems to be the general opinion that, unless the cars are very old, the wooden truck bolsters should be replaced by metal bolsters. If this is done the truck bolster can, in many cases, be made low enough at the center to permit of a new body bolster being applied of sufficient stiffness. Plainly the best treatment of old cars cannot be discussed in a general way, as so much depends upon the design, age and condition of the car and how much is to be gained by reducing the friction at the side bearings. The effect of this friction on the total train resistance should first be determined by trial with some accuracy, although it seems reasonable to suppose that on roads with many curves the free swiveling of the trucks is important. Still, it is possible that the net results to be gained are not such as will warrant any considerable expenditure for fixing up

Dimensions Controlling the Depth of Body Bolsters.

Name of Road.	Car.		Measurements from top of rail to					
	Kind	Capacity Lbs.	Top of Truck Bolster ins.	Bottom of Body Bolster ins.	Bottom of Sills ins.	Top of Sills ins.	Top of Floor ins.	
Chicago, Burlington & Quincy .....	Box	60,000	26½	31	37½	46¾	48½	Top plate of bolster above sills.
Lake Shore & Michigan Southern .....	Box	60,000	31½	34¾	40¾	48¾	50	Top plate of bolster above sills.
Cleveland, Cincinnati, Chicago & St. Louis .....	Box	60,000	27¾	32¾	39½	47½	49½	Bolster below sills.
Columbus, Hocking Valley & Toledo .....	Box	60,000	27½	29¾	37½	46½	48½	Bolster wholly below sills.
Northern Pacific .....	Box	70,000	24½	27¾	37¾	46¾	48¾	Bolster wholly below sills.
Chicago & Eastern Illinois .....	Gondola	80,000	29½	32	39½	49½	51½	Bolster wholly below sills.

readily altered so as to eliminate the friction at the side bearings. Evidently the two are entirely different questions.

As showing the relative positions of the parts of the truck and the underframe for a few typical flat bottom cars built within the past two years, a table of measurements is given. It will be noted that in the Lake Shore & Michigan Southern cars the floor line has probably been placed as high as is permissible on account of platforms. It is also apparent how much vertical space is gained under cars by using the low trucks of the Northern Pacific. Should the floor line be made 50 in. from the top of the rail and 2 in. flooring, 10 in. sills and low trucks be used, it is evident that a vertical space of 10½ in. would be available below the sills for the body bolster of an 80,000-lb. capacity car, allowing 3 in. between the bolsters for center plates. Undoubtedly the body bolsters having the upper plate above and the lower one below the sills will not be generally used if a more simple construction can be provided, and relatively to this Mr. Charles T. Schoen has furnished the following dimensions of pressed steel bolsters which have been used under different cars without showing deflection. The figures are representative of recent practice:

Capacity of car.	Depth at center.	Width at center.	Maximum fibre stress.
Lbs.	In.	In.	Lbs. per sq. in.
60,000	8	15	11,000
70,000	8	15	12,000
80,000	8½	17	11,000
100,000	9	17	11,000

These bolsters are made of steel having an ultimate tensile strength of about 63,000 lbs. per sq. in., so that a factor of safety of over 5 is provided. It has been found that when the maximum fibre stress of bolsters does not exceed 12,000 lbs. per sq. in. there is no appreciable deflection. It would therefore seem that no radical changes in the design of body bolsters will be necessary for new flat bottom cars of 80,000 and 100,000 lbs. capacity, on a basis that a clear space of 9 in., vertically, is all that is required. To the use of the low trucks there can be little objection, as there is no uniformity in this detail.

For old cars having a space of from 4 to 6 in. between the bottom of the body bolster and the bottom of the sills, and equipped with strap iron bolsters, several different methods have been suggested for strengthening these at small cost. One is to put in truss rods, extending up over the sills and attached near either end of the bolster, while another is to use some form of roller side bearing and allow a portion of the weight to be transmitted through the bearings at the sides. The objection to the last method is that roller side bearings used in the past have not been satisfactory, and recent designs have not been in use long enough to show whether they will fulfill the requirements of continued service.

old cars. Enough, however, has been done to warrant the belief that so far as new cars of large capacity are concerned, the side bearings can be kept apart under ordinary conditions by the use of rigid bolsters, for which there is ample room.

#### The Final Decision Against Traffic Associations.

The Supreme Court of the United States has declared the Joint Traffic Association to be an illegal body, being repugnant to the Sherman Anti-Trust law of 1890, and thus the last hope of regulating the rates on the vast quantity of competitive traffic between the Atlantic seaboard and Chicago is destroyed, unless the Anti-Trust and Anti-Pooling laws can be repealed. The decision must also prove the death blow to the Southwestern Bureau. The majority of the Court is made up the same as it was in the Trans-Missouri case, a year and a half ago—Messrs. Peckham (writer of the decision), Fuller, Harlan, Brewer and Brown; and they say in the most impressive manner that they cannot recede from the position then taken. Justice Field has retired; but the other three Justices, Messrs. Gray, Shiras and White, who dissented then, dissent now. The main points of the decision, as given in the daily papers, are printed in another column. As in the former case, the strength of Justice Peckham's position lies in the plain and direct language of the Anti-Trust law, and in the argument that Congress may do what it pleases in the way of regulating interstate commerce.

The learned Justice certainly does not misconstrue any of the words of the Joint Traffic Association agreement; but he takes the view of District Attorney Macfarlane, of New York, who argued the case before the lower court, that the members of the Association intend to maintain rates as rigidly as they can, perhaps as high as they can, notwithstanding their agreement to do only lawful acts, and notwithstanding the restriction of the power of the Board of Managers to recommending—not ordering—advances in rates. If the agreement is such that it aids the roads in a rigid maintenance of rates it violates the law. To support his contention Justice Peckham argues that a member of the Association is bound to adopt the rates made by the managers or incur the risk of being excluded from the Association and of having all the other members crush it by the merciless competition which they combined, can bring to bear against it. If a road should, by its full board of directors, take individual action on rates, as provided for in the agreement, and the managers were to tolerate such action, the Association would go to pieces. Those companies which continued to act together would, however, still be in essential rebellion against the law.



Justice Peckham seems to admit that for the present and for the immediate future the Association would in all probability make only reasonable rates; but to this consideration he attaches little or no importance. Indeed, as it seems to us, he might just as well omit all this discussion of technicalities and details, for, under the Sherman law, any simple, informal conference among officers of competing railroads concerning competitive rates may be unlawful, and if that law is to be sustained every Association for maintaining rates is dead, root and branch.

In considering the possible consequences of the enforcement of the Sherman Act, Judge Peckham comforts himself with the conclusion that probably "good sense and integrity of purpose will prevail" among the railroad managers, and that therefore they will make reasonable charges; that is, will not cut each other's throats, or impoverish their security holders by carrying large quantities of freight at less than cost. This clause is no part of the essential decision, but it indicates one aspect in which the railroad problem appeals to the non-railroad mind. The trouble with free competition is that one manager who is not possessed of good sense and integrity of purpose can force eight others to carry corn or wheat without profit, or go without it altogether. If all unlawful rate cutting were stopped to-day the situation, without an agreement, would still be deplorable, for no railroad gets all the business it desires, and consequently competition must force rates to the lowest possible point. With a field of such magnitude, and with so large a force of soliciting agents as a vast and complicated business requires, this perfect freedom of competition is inevitable. In a smaller territory, or in a business in which one man could grasp the whole situation, Judge Peckham's hope might stand some chance of realization. In the anthracite coal trade, for instance, the competing railroads have maintained transportation rates, at times, with considerable success, without a formal agreement. But with agents scattered over 500,000 square miles, and with your most active competitor as far from you, perhaps, as Galveston from New York, regulation is an enormously difficult matter, and simple integrity of purpose does not meet the problem.

The very day that this decision comes out, the newspapers report that eight million bushels of grain are being taken from Chicago to Baltimore at secret rates, said to be only 10 cents per 100 lbs., which is less than two-thirds the only public and legal rate; and the railroads carrying the grain are named. One would refuse to believe reports of such bold disregard of the law if it were not that similar reports, undoubtedly based on fact, have been common during the past year, and have never been denied. Moreover, a president, a prominent member of the Joint Traffic Association, has publicly stated that railroad managers break the law, and has made the statement in such language that no one doubts what roads the managers are connected with. The defense of these law-breakers is that the law-abiding road can get none of the competitive business. Justice Peckham, doubtless, would say to any manager desiring to be honest, Go without the business and prosecute your law-breaking competitor; but the trouble with this advice is that the legal machinery provided by the Government utterly fails to detect the wrong-doers.

The prospect of any change in the anti-trust or anti-pooling law at the next session of Congress is dubious. The Washington correspondent of the New York Journal of Commerce says that the Interstate Commerce Commission and the Congressmen who agree with the Commission's views, are still determined that no legislation desired by the railroads shall be passed until the railroad interests agree not to oppose bills giving the Commission power to regulate rates, and that "Neither of these two opposing parties is likely to be able to secure legislation from Congress against the determined opposition of the other. . . . But a strong effort will be made next winter to present a bill to Congress permitting pooling contracts by providing that such contracts shall be subject to the approval of the Interstate Commerce Commission. If agreement can be reached upon such a measure it may be possible to pass it through both Houses during the short session."

For the present, the Association will probably undergo little change. The organization, or something like it, must be continued, if nothing more than as a tariff bureau; for the negotiations that are constantly necessary between the members would have to be conducted under enormous disadvantages if there were no central meeting point. It is likely, however, that the roads will not deem it necessary

to each have one of its most important traffic officers devote the whole of his time to the work of the Board of Managers, and the personnel of this Board may therefore be considerably changed.

There is much gossip in the newspapers about the effect of the decision on the immediate fortunes of the roads, but this cannot be a matter of much consequence, for the Association has had little or no influence on rates since the Trans-Missouri decision. Every road knew that the Association was repugnant to the anti-trust law, and therefore placed no dependence upon its work. There have been no important changes in the value of the stocks of the railroads in the stock market as a result of the decision. It is gravely remarked by one reviewer that the effects of the decision can only be learned by experience; but as, for a year and a half, each road has acted independently, making secret rates whenever it saw fit, we may safely say that the lesson of experience is already before us. Rates on the principal competitive commodities cannot be much lower than they have been during the recent great wheat movements, when roads which had difficulty in getting cars still took the freight at about cost.

#### The Meaning of a Stop Signal.

A correspondent, whose letter appears on the first page of this issue, complains because we did not more specifically describe the "lessons from England" which were to be found—or at least were suggested as being discoverable—in the reports of three collisions (at Dunbar, Barassie and St. Johns) which were summarized in an article published in the Railroad Gazette of Oct. 7. And, concluding that we neither drew nor intended to draw from the facts any lesson justifying American practice, he seems to think that he is warranted in drawing the inference that we accept the lessons of Dunbar and Barassie as interpreted by the English government officers; that is, accept the doctrine that we should not depend upon an engineman to obey the indication of a distant signal when he is running at high speed.

We confess that the title of our article was so worded that it might plausibly be taken to give color to our correspondent's assumptions; and possibly our statement of facts may have appeared friendly to the writers of the original reports. The inspecting officers who made the reports were very sure what lessons they saw in the occurrences narrated, and our abstracts of their narratives retained the tone of the originals, as we intended they should. Our main purpose in publishing the article was to give the salient facts connected with the collisions. Comment was a secondary matter. After the facts, we aimed simply to set forth the American conditions with which the facts should be compared.

Englishmen, to guard against the possibility of a collision due to disregard of a stop signal, direct the signalman to keep the track clear 80 rods beyond the signal. In this country, speaking generally, this is not deemed necessary. A preceding train, or a train on a cross-track, may be only a few rods beyond the stop signal, but the signal is depended on to protect it from any train approaching. Englishmen justify their way on the ground that experience has shown it to be necessary. Americans answer that the only sound theory of the stop signal is dangerously impaired by the English practice; for enginemen, seeing that they are not trusted to stop at a stop signal, will not take the vigilant care to avoid overrunning the signal which they would take if the clear track beyond were not provided for in the regulations. We added that the very good record for safety of passengers and employees which the English railroads have made for many years precluded any assertion or claim that our enginemen can be more surely depended upon than can theirs to unerringly obey stop signals. We also mentioned the modifying effect of derailleurs or diverging switches. With a suitable diverging track at the stop signal the English will suspend their rule which we are criticising. On the other hand, the use of diverging tracks (derails) at numerous stop signals in this country gives evidence that the theory followed by the English finds some favor here.

Our course in leaving our readers to draw their own conclusions is not so pusillanimous as P. C. S. seems to think. His phrase, "best signaling on American railroads," reveals a difference between his point of view and ours. Our signaling is not all best. In comparing American theories and ideals with those of England, we must have some regard to the faithfulness with which they are carried out in practice.

A rule substantially the same as the English "section clear but station blocked" arrangement is in use on at least one important American road.

Under this rule, if signalman B has a train standing between his home and his starting signal he must not let A send on another train without first informing it that there is a train occupying the track immediately beyond the home signal at B. Another American road had, and, we believe, now has, a rule requiring signalmen to make sure that the first train is 900 ft. beyond the home signal before giving the next train the right to come to the home signal. This space arrangement, reduced from 900 ft. to 300 ft. or less, finds favor on many roads. It is true that this expedient is introduced, primarily, with a view to making up for the absence of a distant signal; but the violation of sound theory and the impairment of discipline are not affected by that circumstance. From the foregoing considerations it may be seen that in comparing our signaling practice with England's, as regards the safety which it affords to passengers, there is a possibility that we may ascribe too large a share of the good results on American roads to the difference between our practice and England's.

The final test of the efficacy of signals and signal regulations is freedom from collisions. Accurate statistics of collisions in this country are not available, and therefore the records of those collisions which kill or injure passengers, which become public in both England and America, are about the only ones which can be compared on anything like known conditions of equality, and on this basis Americans have reason to be modest. Not all collisions are due to the particular kind of negligence now under discussion, but we have to report about every month one or more collisions due to enginemen running past positive stop signals, so that we cannot assert with much confidence that American railroad enginemen—or railroad officers—are above the necessity of taking lessons from England.

So much for comparisons of England with the United States. But when it comes to comparing theories or "best practice" we need not hamper ourselves with geographical considerations. As we said in the former article, sound theory has been more closely followed (in making regulations) here than across the water. In fact, as we understand it, no Englishman sets up any theory to justify the practice under consideration; he simply claims that experience has shown it to be necessary. Our correspondent need have no quarrel with us; indeed, there is no ground for one. If the writer of these lines were the manager of any one of a dozen American roads that could be named, he would, indeed, find a lesson in the collisions under discussion, but it would not be to adopt the English clearing-house rule. It would be to perfect the discipline of enginemen and signalmen so that not only could we claim the best theory or standard in the world, but also claim the closest possible adherence to the standard adopted. We ought not to set ourselves up for comparison with England or any other country, unless we can show one (or both) of two things—either that we carry passengers (and employees) safer, or (granted that our theory is better than theirs) that our practice is in accordance with our theory.

The trouble with the engineman who caused the smash-up at Dunbar was, undoubtedly, that he had taken the same risk before and had come out safe. His employers seem to have depended upon the signalman to prevent serious results from such enginemen's negligence, but in this case the signalman failed them. The only remedial measure possible is to have inspectors follow up both signalman and engineman so closely that neither can take such risks without realizing that he is very likely to be found out; and as long as it is plainly evident that American enginemen take risks of a similar kind, the lesson applies to us as well as to our cousins. If the experience of the past throws any light on the future, it is pretty safe to say that similar results from similar neglect will some day blot the record of some American railroad. It will be answered that our enginemen will not take such a risk as was taken at Dunbar, because they know that it is dangerous to pass a stop signal under such conditions, whereas the Scotchman knew that the signalman was under orders to keep the track clear; but the reply to this is that instances in which similar negligence actually occurs are being reported every now and then. Flagrant cases may not be very common (a large percentage of cases never get into print, and therefore we do not know how bad they are), but it needs no argument to prove that the only way to know what enginemen's habits are is to make frequent tests to detect lapses from the requirements of the rule.

The experience of sixty years with the rule requiring enginemen to observe the position of



switches as soon as they come in sight of them has proved to everybody the very common prevalence of what we may call routine negligence, and the necessity of watching all enginemen, first-class or other, to detect it. It is only by such watching and testing that we can put ourselves in a position to answer the Englishman's argument that experience tells us not to depend upon enginemen to obey signals.

In short, the provision made by the English for letting a train run past a stop signal was introduced to offset defective discipline, and as their discipline cannot be shown to be worse than ours, we must, if we are going to claim that such an offset is unnecessary, first see to it that our own discipline is as good as it can be made. They have used fixed signals many years longer than we have, and as no one can form safe conclusions from results except by taking the records of a long series of years, our claim might be answered by the assertion that we are too young to be competent critics.

The question has been asked, Is the number in the entering classes of the technical schools this fall larger than the number in former years? To answer this, and thus determine in a measure the trend of engineering education in this country, we have secured from many of the colleges and universities a statement giving the number of entering students who are taking the different engineering courses, and in many cases it has been possible to form some estimate of the percentage of technical students to the entire enrollment in the university or college. In a few cases information has been received which enables us to determine the number of students taking the different courses. In this and in former issues some of these notes have been printed, and, as a result of this study, it becomes evident that the number in all the engineering courses this year is perceptibly larger than last. Probably 15 per cent. increase would be a fair figure for the colleges which have replied. In but one university has there been a report of a marked decrease in attendance, amounting to 20 per cent. of the total number enrolled. It is of interest, on the other hand, to note that in one of the Eastern universities the entering class of the mining department reports over 40 per cent. more students than last year's class. That this is exceptional it is hardly necessary to state. In electrical engineering the increase appears to be more in the Western than in the Eastern colleges, and in some cases the percentage of gain in the former locality amounts to something over 30 per cent. Any such comparison, however, to be perfectly fair, should be based on the reports from more schools than we have heard from.

Significant as to the timber resources of Manchuria and the great Amoor Valley of Siberia is the fact that the Russians are buying in Oregon the timber for the railroad they are building across the Chinese territory of Manchuria. This timber goes across the Pacific to Vladivostok, by rail thence to a tributary of the Amoor, down that tributary, up the Amoor itself, and up another tributary which flows through Manchuria and is navigable to the point where the railroad will cross it. [See map in the Railroad Gazette of Sept. 30, page 702.] If suitable timber were to be had anywhere on the Amoor it could be floated down to the mouth of the Sungari, the Manchurian tributary. Doubtless there is abundance of timber in Eastern Siberia, but till the railroad is completed a long way further east it cannot be got to the line of the Manchurian Railroad; and, even if the railroad were completed, it is doubtful if the transportation would not cost more than from Oregon over the Pacific, with a voyage more than 5,000 miles long, but not costly.

Mr. G. W. Rhodes called attention, at the last meeting of the Western Railway Club, to the fact that locomotive boilers, in districts where the feed water is heavily charged with lime, should be watched more carefully when carrying high steam pressures than is necessary with pressures of about 140 lbs. per sq. in. The Chicago, Burlington & Quincy, as well as the Chicago, Milwaukee & St. Paul, has found that locomotive boilers carrying high steam pressures corrode more rapidly than low-pressure boilers.

#### NEW PUBLICATIONS.

The Story of the Railroad. By Cy Warman. Octavo, 280 pp. Illustrated. New York: D. Appleton & Co., 1898.

This story of the railroad is the fourth volume in the Story of the West series, edited by Mr. Ripley Hitchcock, the accomplished Literary Adviser to the house of D. Appleton & Co. As we understand it, Mr. Hitchcock's ruling idea in this series has been not to present chronology or statistics or set essays on the social and political development of the great West, but to give to us vivid pictures of the life and the times in the period of great development and to let us see the men at their work—their characters and their motives. He has been fortunate in his

choice of authors, and in Mr. Warman's book we are kept constantly reminded of the fortitude, the suffering, the enterprise and the endurance of the pioneers. We see the glowing imagination of the promoter, and we see the engineer scouting the plains and the mountains, fighting the Indians, freezing and starving, and always full of a keen enthusiasm for his work and of noble devotion to his duty. The construction train and the Irish boss are not forgotten, and in the stories of their doings we find not only courage and adventure, but the wit and humor which the Irishman always carries with him.

About one-quarter of the book tells of the origin of the idea of the Pacific railroads, and of the actual promotion and building of the Union Pacific. A little more space is given to the Atchison, which is treated in the same way. Then we have brief accounts of the Northern Pacific and of some Southwestern enterprises. One chapter, much too short, is on "the railroad engineer—a few illustrations showing how he handles things," which is devoted to the civil engineer, concerning whose exploits in building the pioneer railroads a volume ought to be written by some man who has the sympathy, the knowledge and the imagination to understand and describe the man to whom our Nation owes a debt that can never be paid.

Cambria Steel.—A handbook for Engineers and Architects. Cambria Iron Co., Johnstown, Pa. Leather, 4½ x 7 in.; pp. 350; illustrated; price \$2.

This is the fourth edition of the Cambria Iron Company's pocket book, and in the revision much of value has been added and the whole re-edited. The additions include complete tables of weights, dimensions and properties of the principal structural shapes made by the company, with other useful data and tables. As it now comes to us, the book contains tables prepared especially for this edition, giving some of the properties of I-beams and channels. The spacing of I-beams is given in detail for each section, thus making the desired information on this subject more convenient than in former editions. The above is but a brief mention of a few of the desirable additions, and in its make-up with these changes the book takes an even higher rank than heretofore among publications of a similar character.

Steel in Construction.—The Pencoyd Iron Works, A. & P. Roberts Co., Philadelphia, Pa. Russia leather, 4½ x 7 in.; pp. 346, with complete index and 34 plates.

This pocket book comes to us after a thorough revision and the addition of much new matter. The real value of the nine previous editions is too well known to make it necessary to praise the present one. It may be remembered that the eighth edition was printed in 1892, and not long after the making of wrought iron was abandoned at Pencoyd and the entire plant used for turning out open-hearth steel. The ninth edition was consequently revised to conform with changes in standard sections. The present edition has carried the revision still farther and has added considerable useful data relating to fire-proofing, flooring, Pencoyd specifications for bridges, electrical formulas, and general tables concerning the properties of material other than iron and steel.

Commercial Cuba.—Scribners will soon publish, under this title, a book for business men, written by Mr. William J. Clark, of the Railroad Department of the General Electric Company, designed to give in detail the conditions and possibilities of every industry on the island of Cuba. Each town and district will be critically reviewed, with a view to the outlook for American capital and brains. The price of the book will be \$4. It will have eight maps, seven plans of cities and 40 full page illustrations.

#### TRADE CATALOGUES.

Frogs, Switches, Crossings, Etc.—The Weir Frog Co. of Cincinnati, O., sends us a new catalogue of track material, being Catalogue No. 5. About 72 cuts and 48 pages have been added to the catalogue of last year. Some notion of the quantity and variety of the product made by this house may be gathered from the fact that 20 pages are taken to show rigid frogs, 33 pages for spring rail and other movable frogs, 60 pages for crossings, rigid and movable, and 80 pages for switches and their fixtures. Besides those items the company makes rail braces, expansion joints, foot-guards for frogs and switches, track for industrial railroads and, finally, a complete system of electrical interlocking.

Especially attention is called to some new or recently modified spring rail frogs. One of these is a hinged wing frog; the fixed rails are riveted to a steel base plate and the wing rail is hinged to the base plate instead of to a rigid rail. A re-enforcing rail is riveted to the moving wing rail, giving a double bearing for wheels over the flangeway. The spring housing permits the wing rail to be removed without taking the frog from the track. Especial attention is called also to the Douglas double-spring frog, in which the wing rails are not opened and closed by every truck which passes over the frog. Frogs are

made not only for steam railroads and tee rails, but for electric and street railroads and for girder rails; and the same is true of crossings. Some movable point crossings are shown, with recent modifications, as, for instance, a double slip switch with automatic movable frog points, which latter require no lever stand to work them. A new design for a three-throw split switch is shown, equipped with adjustable switch bars, the switch rails re-enforced on both sides of the web. Derailing safety switches are shown in some variety, not only for steam railroads, but for the crossings of steam railroads by electric roads, the latter being a very important situation to be protected.

About 20 pages of the catalogue is given to a description, with illustrations, of the electrical interlocking, made under the patents of Mr. Weir, Mr. Joseph Ramsey, Jr., and others. It is said that out of 15,000 movements made at the first plant, from the original designs, there was but one failure to be charged to the system, and that was on the side of safety. A second set of records shows more than 45,000 movements with no failure. As now installed, the motive power is furnished by two gasoline engines belted to two dynamos, using the electrical current at 110 volts. In the case of a crossing of an electric railroad by a steam road, the current may be taken from the wires of the electric road, reducing the voltage by a transformer.

"The Empire of the South" is the title of a book 9 in. x 11 in. of two or three hundred pages, with a handsome white board cover, decorated in colors, which the Southern Railway has issued as an advertisement of the country along its numerous lines of railroad in Virginia, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Louisiana, Kentucky and Tennessee. The work is described in the sub-title as an Exposition of the Present Resources and Development of the Southland, and it appears to justify its title. The author's work has been done in a thorough and painstaking manner. The book is copyrighted by the General Passenger Agent of the road, and is dedicated, by the company, to the people of the South, but the name of Frank Presbrey, 12 John St., New York City, appears as "designer, writer, illustrator and publisher."

The notable feature of this work is a profusion of excellent half tone engravings, from photographs, showing the cities, the industries, the country life and the scenery of the states above named. The very numerous views of cotton mills give the Northern reader an idea of the extent to which this industry has grown in the South during the past ten years. The text consists of a general introductory chapter of about a dozen pages, followed by more detailed articles about each one of the nine states named. The authorities quoted by the author are reliable, and there is a marked freedom from padding or useless matter.

The Whiting Foundry Equipment Co., with works at Harvey, Ill., has issued the second edition of its 6 in. x 9 in. general catalogue; which, it states, has become necessary to meet the increasing demands for descriptions of the various apparatus and machines made by the Whiting Co. We find on the first pages particulars of the special cranes worked by compressed air. A few illustrations of compressed air, gantry and traveling cranes show their installations for different service. The 52 pages of this catalogue contain a full description of all the equipment required in any foundry, together with tables of sizes and other interesting and handy information. The illustration of the converter, shown on page 52, is worthy of particular notice. The back cover page contains a complete index, which adds to the value of this trade publication. Supplementary catalogues give full descriptions of the machinery, some of which are referred to but briefly in this catalogue.

"A Success Beyond Doubt" is the title of an 8-page pamphlet prepared in the interests of the Harrington Railbonding Co. of 120 Liberty street, New York. Engravings and pithy references to the merits of this bond (and an occasional incidental mention of the demerits of the plastic bond) occupy but half the space on each page, the remaining part being taken up with illustrations and a mention of the principal facts (as dimensions and contract price) of the United States battleships and of the cruisers Brooklyn and New York. Not until the back cover has been reached does one find out the apparent relation in the mind of the compiler between fighting boats and rail bonds. There it is stated, "Uncle Sam is proud of his navy, his army and his call for Bonds."

The Hancock Inspirator Co., Boston, Mass., has just issued a 6 in. x 9 in. catalogue, descriptive of the Hancock inspirator for locomotives and stationary, marine and portable boilers. The catalogue, which is known as "R. R. 98A," is primarily for the motive power department of railroads, and 14 pages are given to descriptions and illustrations of types A, B, C and D of the Hancock locomotive inspirator. The new Hancock composite locomotive inspirator is also shown, as is the Hancock locomotive hose



strainer, a description of which appeared in the Railroad Gazette of June 10, page 409.

The General Electric Company has just issued a pamphlet entitled Improved Brush Arc Lamps, giving the modifications introduced in the latest type of single and double Brush arc lamps. Each improvement is explained, the leading features are summarized, each under its own heading, and the concluding pages give a classified list of the parts of the improved lamp and of lamps Nos. 30 and 31.

Chain Saw Mortisers.—The New Britain Machine Co., New Britain, Conn., issues a small catalogue descriptive of the different types of chain mortisers recently placed on the market. These include the styles from type No. 1 to No. 6, the last mentioned being the "universal mortiser," with an auxiliary hollow chisel attachment and having many adjustments, making it convenient for use in a large variety of work.

#### The Purchase and Inspection of Railroad Supplies.

(Continued from page 777.)

selves. This suggested the second topic of my paper—the advantages of buying under specifications and of the systematic inspection and testing of materials purchased, to make sure that the seller is living up to his part of the contract. Of course, buying an unnecessarily high grade of supplies, at a correspondingly high price, is to be avoided. It is here that the purchasing agent must rely on his experience and judgment, and upon buying on the basis of definite standards of quality, as shown by rationally constructed specifications or standard samples.

By "rationally constructed" specifications are meant those which require only what is essential for satisfactory and long service, and within the power of the manufacturer to produce, without revolutionizing his processes of manufacture, putting in new and special machinery, etc. The responsibility should fall on the purchasing agent who is willing to buy poor stuff because it is cheap, or who does not take reasonable precautions to ensure his getting supplies free from adulteration, and of the quality best suited to the service they are to undergo. To protect the railroad company, himself and the honest manufacturer, there is, to the best of my belief, but one method—that is, to specify in all cases where there is any room for doubt, just what quality of material is wanted and what kind of inspection and test they are expected to pass, and then the provide for such inspection.

No engineer of a railroad would, I imagine, think for an instant of having a steel bridge constructed without specifying what he deemed requisite as to strength and workmanship and arranging for rigid tests to be made by competent inspectors representing the railroad and not the bridge manufacturer, and if this necessity is generally recognized in the case of bridge material, why not also in the case of axles, firebox steel, staybolt iron and wheels, as defective material or faulty manufacture is in these cases also likely to cause serious accidents, as well as the expense of renewals, which might be largely avoided or lessened by intelligent inspection? And this same argument applies to a greater or less degree to many other classes of materials.

There has been a lively discussion for some time past on specifications for air brake hose, some criticizing those adopted by some of our leading roads as too severe, or not showing the actual quality of the hose in service; others claiming that the proper way is to buy on a service guarantee, while a fellow purchasing agent, Mr. Ira C. Hubbell, approves of selecting some reliable manufacturer or dealer and trusting him, without hampering him with specifications. It strikes me that there are two objections to this latter course—one is that the buyer loses the advantages in the way of price that come from competition if he confines his purchases to one or two makers, and the other is that even if the head of the firm is entirely honest and anxious to give the consumer the best he can produce, those under him are not always so interested to do this, and may ship goods which happen to be below the standard, if they know that there are to be no tests made. As for buying air-brake hose on a service guarantee, I entirely agree with Mr. Waitt as to this practice not giving satisfactory results, owing to the difficulty of the interested parties agreeing as to the cause of the failure or the responsibility for it, and in keeping track of each piece of hose, the case not being, in my opinion, analogous to that of car wheels, as claimed by Mr. Campbell in his article in the Railroad Gazette. Mr. Campbell says that 99 per cent. of the roads buy their wheels on the mileage basis. It is no doubt true that all roads buy them on that basis, but an appreciable percentage require, in addition, that they pass a preliminary inspection and test. If a wheel breaks in service and causes a wreck, of what consequence is the assurance that the maker will replace that wheel? He is not held responsible for the loss of life and of thousands of dollars' worth of equipment, which might have been averted by preliminary tests, at the paltry cost of a single car wheel, by which the

defective wheels, represented by the sample tested, might have been rejected, and therefore never have been put in service. Moreover, the system of buying only of firms of long-established reputation, because they can be trusted in the opinion of the buyer, does serious injustice to younger houses, equally honest and often turning out goods of equal quality. By adopting intelligent specifications, supported by a subsequent inspection, the purchasing agent can safely invite all respectable houses to compete for his business on an absolutely fair and impartial basis, and in this way he can safely give the order to the lowest bidder, knowing that he is protected by the tests to be made later.

In my opinion, the maker of high grades of goods is benefited by this system as much as the consumer. He is protected against the makers of inferior or adulterated articles who, in a competition based on prices alone, would get the business. The profit on high-priced goods is, I suppose, greater, as a rule, than on cheap ones, and the only reason why a dealer should prefer to sell the latter would be the fact that the poorer goods would wear out so rapidly that the quantity sold would more than make up the difference—an argument which should induce the consumer to avoid buying them.

It frequently happens that the cost of labor in making renewals is so much greater than that of the material used, that it is economy to pay twice as much for material which will last twice as long as some other. Take, for instance, staybolts, and consider the following figures, representing actual practice on one of our large roads:

Average length of radial staybolts, 7½ in.; diameter, 7½ in.; weight, 1½ lb.	
Cost of labor, removing and putting in new bolt.....	\$0.20
Cost of bolt at 6 cents a lb.....	9
Cost of bolt, at 3 cents a lb.....	4½
Cost of labor and material, removing old bolt and putting in one bolt costing 6 cents a lb.....	29
Cost of labor and material, removing two bolts and putting in two bolts costing 3 cents a lb.....	49

The above figures are based on the assumption that the 6-cent iron will last twice as long as that costing three cents, and if this assumption is correct, as it doubtless is in the case of some of the cheaper grades of iron, the use of the better grade shows a marked saving, due to the labor saved by making renewals only half as often with the good iron as with the poor.

A marked saving due to the longer service obtained from high-priced goods than cheap ones is also readily shown in the case of other supplies, such as shovels and scoops, lamp chimneys, lantern frames and globes, galvanized iron pails and cans, switch lamps made of steel instead of the frail ones made of thin sheet iron, brooms, brushes and car washers made of genuine bristles instead of horse hair, etc. In these cases, as in others, I have satisfied myself that it is an economy to pay the difference in price in view of the longer life and better service obtained. The purchasing agent does not put himself at the mercy of the dealer in confining his purchases to these higher grades of material; for having once decided on his standards, he can always find more than one reputable house ready and able to furnish goods up to these standards, and he thus has the benefit of the competition between these dealers.

The advantage of using a high grade of material is shown in other ways than increased service. Car brasses made according to the proper formula, of a clear, uniform mixture, free from dross and oxidation, with smooth bearing surfaces under the soft lining, and having the proper radius, will show an astonishing reduction in hot boxes, if introduced on a road which has been using brasses bought at a lower price than that at which it would be possible to make a good bearing, or where the brasses were not bought under any specifications and the manufacture was allowed to furnish anything he pleased. In my own experience, I have seen a startling improvement effected by the introduction of specifications and a rigid inspection of bearings.

Another cause of hot boxes is the use of a cheap shoddy so-called "wool-waste," which has no elasticity and settles down in the box and fails to feed the oil up to the journal, and is soon thrown out by the inspector, even if it does not cause the journals to run hot, while an elastic, long-fiber wool will far outlast the other, and keep the bearings well lubricated.

These instances could be easily increased, but I think I have sufficiently illustrated the point I wish to make, and any purchasing agent, if he does not already share my views, can, I believe, readily satisfy himself that I am right by actual experience.

#### TECHNICAL.

##### Manufacturing and Business.

In a recent letter to the Westinghouse Electric and Manufacturing Co., Mr. R. G. Vance, Jr., Superintendent of the Stevens Coal Co., makes the following statements regarding the Baldwin-Westinghouse electric mine locomotive in operation in their mines: "It gives us pleasure to say that this motor is giving the very highest possible satisfaction and is attracting considerable attention in this valley. It has been running since May 1, and has not cost a dollar in repairs, excepting a new valve for sand box and a head light base, broken in a collision with a car. It

is running on a road of 25-lb. steel 4,000 ft. long, over undulating grades varying from 1 to 6 ft. per 100 ft. Its regular load now consists of 20 cars of 1½ tons capacity, and the time required for each round trip is from 17 to 19 minutes. We have pulled as high as 25 of these cars at one trip, which it did with all ease. When necessity requires we can pull 30 cars, giving 50 per cent. more capacity than you guaranteed."

The Safety Appliance Co., Ltd., of Boston, Mass., reports that the coaches and baggage cars of the Dayton & Union are being equipped with its brake equalizer and dead lever take-up, and that during the past month it has received orders to equip over 900 cars.

The Reeves Machine Co. has been incorporated in New Jersey by Clifton Reeves, Charles M. Heath and Linton Satterthwait, with a capital of \$100,000, to make engines and machinery.

Edwin Stewart, Paymaster-General, U. S. N., is asking bids for a traveling crane for the yards at Norfolk, Va.

We understand that contracts will soon be let for the building and equipment of a new electric light station and water-works for Rockville, Ind., and that James B. Nelson of Indianapolis is preparing the plans and specifications.

The Ferracute Machine Co. of Bridgeton, N. J., is enlarging its plant.

The Columbus, Marshall & Northeastern, of which H. E. Hollon is President, at Marshall, Mich., will require 40,000 tons of 60-lb. rails. The company is now negotiating for rails for the first section. (See Railroad Construction column.)

The De La Vergne Refrigerating Machine Co., New York, has installed a 20-h. p. Hornsby-Akroyd oil engine for the Water Board of the town of Winchester, Mass. It is to be used for pumping water for the high service in the town, and will run a 500,000-gal. triplex pump.

Articles of incorporation have been filed in California for the Pacific Car Equipment Co. The capital is \$250,000, of which \$223,000 has been subscribed as follows: J. H. Thompson, \$75,000; A. C. Rumble, \$75,000; W. D. Huntington, \$30,000; Richard Gorrill, \$1,000; M. L. Requa, \$1,000; G. H. Strong, \$1,000; F. W. Fry, \$20,000; H. L. Huntington, \$20,000.

The Supreme Court of New York has appointed William A. Morrison receiver of two patents belonging to the Peerless Coupler Company of 26 Cortlandt street, New York, on the application of Horace J. Morse, who obtained a judgment against the company for \$3,574 on Aug. 30. The receiver is authorized to sell the patents and apply the proceeds on the judgment.

The city of Ballard, Wash., will buy some electric light machinery and in the Council a motion was carried empowering the committee appointed to employ a competent man to examine the machinery offered for sale by different companies.

It is stated that Mr. Brown, of the firm of Fanning & Brown, is figuring on putting in an electric light plant at Colfax, Wash.

##### Iron and Steel.

The American Steel & Wire Co. has declared a quarterly dividend of 1½ per cent., payable Nov. 1, to stockholders of record Oct. 20.

E. H. Gary, President of the Federal Steel Co., is reported as stating that the company will soon build 300 new coke ovens at Lorain, O., and 600 at Connellsville, Pa.

##### New Stations and Shops.

Several meetings have been held by officials of the roads running into Fort Worth, Tex., to consider building a Union station.

The new passenger station to be built at Fort Madison by the St. Louis, Keokuk & Northwestern is to be of red pressed brick, with stone trimming and black slate roofing. The building, which will cost about \$10,000, will be 24 ft. x 97 ft. The contract has been awarded to A. W. Smith of Fort Madison, and work has been begun.

The Union Pacific has awarded the contract to the Grace & Hyde Co., of Chicago, for building a new Union station at Omaha. The main building will be 80 ft. x 276 ft., of Bedford stone up to the window sills and pressed brick above that, with tile roof. The waiting room is to be 50 ft. x 112 ft. Separated from this building by a passageway of 24 ft. will be another building 50 ft. x 220 ft., to be used for eating, mail and express rooms. There will be a viaduct approach from Tenth street to the level of the tracks. The estimated cost is about \$300,000.

We are officially advised that the Kansas City, Pittsburgh & Gulf does not intend at present to enlarge its shops at Pittsburgh, Kan., as has been reported.

A new Union station will be built at Tifton, Ga., by the Plant System, the Georgia, Southern & Florida and the Tifton & Northeastern.

The Quebec Central has awarded a contract to D. G. Loomis & Sons for building new shops at Mewington, Ont. The approximate cost is \$20,000.



The Dayton Union Railroad, organized to build a new union station in Dayton, O., has adopted plans for such building.

Dispatches from Monmouth, Ill., state that the division headquarters of the Iowa Central have been removed to that place from Keithsburg, and that a 10-stall roundhouse, repair shops and other buildings will be built at Monmouth.

Bids are being asked for the addition to the temporary post office, Chicago, mentioned in our issue of Sept. 23, to be built on the south side of the present building, with a frontage of 108 ft. on Michigan avenue, and a depth of 220 ft. The contract will be for building the one-story brick walls, plans for the interior not having been made. The work will be done under the direction of the Supervising Architect of the Treasury Department.

#### Steel Cars.

We are informed that the Schoen Pressed Steel Co. is now turning out heavy steel cars at the rate of 17 a day. A number of important orders have been received recently, and negotiations for others are in progress.

#### T-Rails for a Street Railroad.

Heavy T-rails are being laid by the North Jersey Street Railway Co. at Arlington, N. J. After the controversy of T vs. grooved rail, the company secured the right to use the T-rail. The street is about 60 ft. wide, and was dug out to a depth of 2 ft., from curb to curb. In the center of the street two tracks were laid with 70-lb. T-rails on hewn ties, about 2 ft. centers. The spaces between the ties are filled in with concrete. The tracks, with the space between them, are paved with Belgian blocks, which in turn are flushed with cement. A "distance" piece of hard wood is bolted to the inner side of the rail, forming with the rail and pavement a groove for the wheel flange. Between the tracks the pavement is flush with the face of the rail, and on both sides of the tracks the street is macadamized. Large stones are first put in place and the size is gradually decreased up to the ties. Then about 6 in. of macadam is laid. Over this a coating of fine screenings is laid and rolled down. This construction makes a perfectly smooth road from curb to curb, and also forms a drain for all surface water.

#### Electricity for Working Turrets.

Capt. O'Neill, Chief of the Bureau of Ordnance, U. S. N., says: "Experience has shown that guns in turrets operated by electric power can be laid upon more accurately and made to follow a moving target than when operated by steam, hydraulic or pneumatic power. There are no water pipes to freeze, no steam pipes to burst, and no delay in obtaining a full working pressure, and no troublesome or noisy exhaust pipes to deal with. A burned-out fuse can be replaced quickly or a broken wire repaired, and as the wires can be led below the armored deck, there is little liability of the latter becoming necessary."

#### The John Stephenson Co.

Albert A. Wilcox of Paterson, N. J., and Louis Stern of New York, have been appointed temporary receivers of the John Stephenson Co., in proceedings brought on behalf of the Directors of that company for voluntary dissolution. An order to show cause for the dissolution was set down for Dec. 6 before James M. Varnum, referee. The assets amount to \$1,175,776, and the liabilities are stated to be \$788,782.

#### THE SCRAP HEAP.

##### Notes.

On the Philadelphia Division of the Pennsylvania all of the mogul freight engines are being fitted with passenger train air signal apparatus.

The Pennsylvania and the Philadelphia & Reading railroads have resumed the collection of excess fares on passenger trains and the issue of rebate checks.

The Great Eastern Railway of England now has six series of lantern-slide pictures, illustrating scenery and historical objects along the line of the road, which are arranged, with suitable descriptive matter, for public lectures or exhibitions. This advertising matter is lent without charge to associations desiring to use it for evening entertainments.

The fact that the Denver & Rio Grande has a chaplain seems to have aroused a spirit of emulation in the Rio Grande's neighbors. It is announced from Topeka that the Rev. S. E. Busser, who has been Rector of St. Andrew's Church, at Emporia, has been appointed Superintendent of Reading Rooms for the Atchison, Topeka & Santa Fe. Mr. Busser will have charge of all reading rooms and libraries throughout the Atchison System. He will provide suitable literature and "will encourage the employees to read it."

Since the wrecking of an express car by robbers near Kansas City on the night of Sept. 23, the police of that city have been active in hunting for the criminals and a number of men have been arrested, including the one who a few months ago fell off his horse in the outskirts of Kansas City one night while on his way to rob a train, and was so badly hurt

that he had to be helped and thus betrayed his errand. On Oct. 17 five other men were arrested, including Jesse James, Jr., who, until recently, kept a cigar stand in a hotel at Kansas City. Since James was arrested seven lawyers, some of them prominent, have offered to defend him free of charge.

Ex-Governor Basill, of New Hampshire, has complained to the Interstate Commerce Commission that the Boston & Maine Railroad is not complying with the order of the Commission made in 1891, to discontinue the issuance of passes to persons not exempted from the operation of the Interstate Commerce law. The complainant asks that the whole question be reopened, and that the Commission decide as to the rightfulness of issuing passes to newspapers, hotels, milk dealers and others, which points were left undecided in the former investigation.

#### The Chicago Peace Jubilee.

According to the estimates of the passenger departments of the 19 railroads entering Chicago, as reported by the Chicago daily papers, over 200,000 passengers, or an average of about 70,000 a day, arrived in the city for the Peace Jubilee over the various lines during the three days (Oct. 17-19) when the cheap tickets were good. This is exclusive of regular suburban traffic, which is estimated at 150,000 more. In spite of bad weather, enormous crowds were carried by the surface street railroads on the day of the parade, Oct. 19, the number of passengers being given as follows:

Chicago City Railway (South Side).....	343,000
West Chicago Street Railway (West Side).....	321,000
North Chicago Street Railway (North Side).....	210,000
General Electric Co.....	25,000
Total.....	899,000

The normal passenger traffic of the three elevated roads is about 155,000 per day. On Wednesday, the 19th, it was more than double, as shown by the following figures:

Metropolitan West Side Elevated.....	162,000
South Side Elevated.....	129,415
Lake Street Elevated.....	75,984
Total.....	367,399

After 10:30 a. m. of the 19th all cars on surface lines were excluded from the business district, through which the line of march extended, and from that time until 3 p. m., when the surface cars were again admitted, the elevated roads had the advantage of being able to deliver passengers in the center of the city by means of the elevated loop; and this was the only means of getting about in that section for several hours. Trains on the loop were crowded all day, and ran at 5 seconds' interval most of the time, the average time required for the circuit of the loop being 40 minutes, whereas ordinarily the running time is 14 minutes. All the elevated roads put on extra trains, and trains were run at 10 minutes' intervals all night to accommodate the crowds who were out to see the illuminations. On the surface lines the cars ran on time again by 5 p. m. and continued to run until 3 a. m. of the 20th. The most conservative estimate of the number of persons who saw the parade is 600,000. Although the crowds handled by all the roads, steam, elevated and surface, during the three days of the Jubilee, were exceedingly large, no serious accidents occurred. On the 19th the crowds endeavoring to reach the elevated stations after the parade, were so great that policemen were stationed at the stairways leading to the elevated platforms to prevent danger from overcrowding the loop stations.

#### The Tientsin-Chinkiang Railroad.

The North China Herald of Aug. 22 says that the concession for this line was originally given to a United States syndicate, represented by Dr. Yung Wing. Owing to the opposition of the Germans, however, that fell through, and the undertaking is to be carried out as an Anglo-German enterprise, with a capital of about \$5,000,000 sterling. The line will not be an easy one to build. For considerable distance it will have to be built along the bank of the Grand Canal, with water on either side. It will have to cross a range of hills about 800 ft. high, with mountainous and rocky country either side. It will cross the Yellow River, through country which during the summer is under water, and from this crossing to Tschou the country is low-lying and very flat, liable to floods in the rainy season. "It is really a commercial, not a political line, and as such is to be especially welcomed."

#### Technical Schools.

At the Leland Stanford, Jr., University the number entering this fall is 334, a decrease from last year of 77.

The enrollment at the University of Chicago is the largest in its history, the increase being greatest in the undergraduate department, the freshman class having 300 members. The total attendance is now 1,400, against 1,200 during the fall of 1897, and it is expected that 200 more will be added before Christmas.

There has been added to the engineering laboratory of the Clarkson School of Technology, of Potsdam, N. Y., an inspirator presented to the school by the Hancock Inspirator Co., and injectors given by the Nathan Manufacturing Co. and the Hayden & Derby Manufacturing Co.

Columbia University.—The total number of entering students in the engineering courses numbers 183, a gain of 22 per cent. over last year. These are divided as follows: Mining engineering, 48; architecture, 41; civil engineering, 25; electrical engineering, 38; mechanical engineering, 18; chemistry, 13. The total enrollment in all the schools is at present 436, which may be increased to 450 or 460. In the four classes there are now 57 in the department of mining engineering and three in metallurgy; 35 in the school of chemistry and 76 in the school of architecture. The school of engineering numbers 75 in civil engineering, 141 in electrical and 14 in mechanical. Besides these there are 13 candidates for the degree of Master of Arts and Doctor of Philosophy, and 18 special students. This year the most notable increase will be in the number of students of mining engineering, which will be 88, as compared with 57 last year. There will be 36 students in mechanical engineering, and these will be in the first and second classes only, inasmuch as the course has just been organized.

Sibley College, Cornell University.—The October number of the Sibley Journal of Engineering reports

that the Freshman class in Sibley College numbers about 150, and that the registration in the Freshman class of the Undergraduate department is about 470, a considerably larger number than last year. The raised entrance requirements have gone into effect in all colleges of the University, resulting in better preparation on the part of new students. The new Graduate School of Railway Mechanical Engineering, under Prof. H. Wade Hibbard, has enrolled a class, and its work begins with satisfactory assurance of success. In connection with this department a series of addresses will be given by non-resident lecturers. The first lecture in the course will be given by Mr. W. S. Rogers on "Factory Methods in Railroad Shops." The Graduate School of Marine Engineering has an exceptionally large number of students and all courses in the college are well filled. Graduate students and those doing special work are so inconvenienced by the crowded condition of the machine shop that a special equipment of lathes, shaper and drill has been set up exclusively for such work. It is reported that 300 Cornell men entered the army and navy as volunteers during the war. Forty Sibley College men took the examination as Assistant Engineers, all of whom passed the examination, although only 15 were actually appointed and served in the volunteer engineer corps.

University of Tokio.—Mr. Nakayama, Assistant Professor of Civil Engineering at the University at Tokio, Japan, is in this country and has given us some particulars regarding technical education at that University. There are now eight engineering courses, the largest number being in the department of civil engineering, each class having about 40 members, making a total in this department of 120 in the University. Mechanical and electrical each have from 20 to 30 in a class. The total number attending in all the courses is between three and four hundred. Mr. Nakayama graduated from the University in 1883, and at that time many of the teachers came from this country or England, but now there are no American teachers and but two professors from England, one in naval architecture and the other in mechanical engineering; otherwise, Japanese instructors are employed. Up to 1893 there were not more than about 10 in each class, but since that time the increase has been rapid. Mr. Nakayama was engaged in railroad construction work about three years in Japan, and since 1891 has been connected with the University.

#### Indian Creek Dam.

A party of engineers under instructions from the Pittsburgh Filtration Commission, have made preliminary surveys to determine the feasibility of bringing water from Indian Creek to Pittsburgh. The party consisted of Emil Kuechling, of the Rochester Water Works; Allen Hazen, of New York; Morris Knowles, of Pittsburgh; C. H. Fogg, of Greensburg; Frank B. Smith, of Pittsburgh, and Samuel Eccles, of Connelville. Mr. Kuechling said that the masonry dam which would be required, would be 250 ft. high, and 1,500 ft. across the top, and the pond created would contain no less than 2,000 acres of water.

#### Mass Meeting of Railroad Men at Chicago.

It is estimated that about 5,000 people attended an enthusiastic mass meeting of railroad men held at the First Regiment Armory, Chicago, on the afternoon of Oct. 20, in honor of President McKinley. Mr. J. H. Walsh of the Brotherhood of Locomotive Engineers acted as Chairman. Besides President McKinley, Judge John B. Payne of Chicago, Mayor Harrison and Samuel Gompers addressed the meeting. This was the opening meeting of a three-days' joint session of the representatives of the Brotherhood of Locomotive Engineers, the Order of Railway Conductors, the Brotherhood of Locomotive Firemen and the Brotherhood of Railway Trainmen.

#### The Canton Junction Wreck.

An inquest on the derailment of a fast mail train which occurred at Canton Junction, Mass., Aug. 8, was held before the District Court at Stoughton, Oct. 13. It will be remembered that in this case a train running at high speed was thrown off the track at an interlocked junction, and three men in the cab of the engine were killed. The testimony given by officers of the road confirmed the explanation of the cause of the derailment which was given in the report published in the Railroad Gazette of Sept. 30, page 706. A movable-point frog had been left in the wrong position owing to the failure of a connection, and the consequent release of the signal lever while the lock was in the wrong position. The connection was a standard pipe connection formed by a pipe screwed into a sleeve, with a pin as an additional precaution to keep it from unscrewing. The thread of the sleeve and of the rod were considerably worn, and the pin or bolt alone held the parts together. The pin was broken in the middle, and, according to one witness, a civil engineer, was of poor iron. The break was not a new one. The threads in the sleeve were rusted and smooth, but were not stripped. This rod was put in in 1895.

#### The Boston Subway.

Last week we gave a description of the Boston underground electric railroad. Two features of this subway, its whiteness and its noisiness, which our prosaic pen hardly did justice to, are well described by Mary Abbott, a writer in the Chicago Times-Herald. She says:

"If you can imagine a glorified Clark street tunnel, increased a dozen fold in length—a light, clean, handsome passageway, with square white pillars dividing the two sides and beautiful white tile wainscoting all the way near the stations—you may see the subway in your mind. But its tiling and its lightness and its cleanness are all. It is Bedlam let loose, a pandemonium of groaning, creaking trolleys that blow like whales as the cars approach and recede." \* \* \*

[The noise does not all come from the trolleys; the noise of the wheels on the rails, which reverberates from the walls, is very noticeable.]

#### A Patton Motor Car for Rome, Ga.

The Chattanooga, Rome & Southern will put on, for 60 days' trial, a Patton motor car between Rome and Lindale, a nearby suburb. The car will be run with a trailer, and the round trip fare will be 20 cents. A description of the Patton motor car was given in the Railroad Gazette, March 25.

#### Train Stalled on the City & Waterloo Road.

A London correspondent of the New York Sun states that when a train containing about 300 passengers came on the up-grade about a quarter of a mile from the Bank of England entrance of the City & Waterloo road, the electric power proved in-



adequate to carry the train up the heavy grade, and it became necessary for the passengers to walk to the entrance. While there were no choking odors, it was stated that a peculiar sensation of suffocation was soon felt by the closely crowded men and women, and as a result the passengers became panic stricken. No provision, of course, has been made for supplying ventilation beyond what is automatically provided by the motion of the trains.

#### The Kansas City Live Stock Exchange.

The United States Supreme Court has decided, in the case of Hopkins and others, that the Kansas City Live Stock Exchange is not an association in restraint of trade. The yard of this Association lies partly in Kansas and partly in Missouri, but it appears from the decision that the business is held by the court to be no more interstate than if the yard were differently situated. The fact that the cattle bought and sold are shipped to Kansas City from different Western states, and the subsequently shipped to different states in the East, does not make the business interstate. A similar ruling was made in the case against Anderson, involving the Traders' Live Stock Exchange of Kansas City. Justice Harlan dissented from the opinion of the court in both these cases.

#### Electric Lighting at the Chicago Jubilee.

Power for the electric illumination of the Chicago streets during the Peace Jubilee last week was supplied by the Chicago Edison Co., the display being designed and executed by Mr. J. H. Goehst, Superintendent of the Construction Department. The street lights were arranged in festoons 45 ft. above the ground, 100 lights in each, and four festoons to each block. Each light was protected from the weather by a tin reflector and the wires were incased in waterproof rubber covering; 10,000 six candle power lights were distributed over three miles of streets, 1,000 extra horse-power being required to operate the additional lines. The cost of the power was said to be \$350 a night, exclusive of the cost of construction, which was large. It is possible that this illumination may be continued for 30 days. The large municipal arch at Washington and La Salle streets was contributed by the Chicago Edison Co., the Western Electric Co., and the General Electric Co., at a cost of about \$3,000.

#### Abatement of Yellow Fever.

There were frosts throughout the Southern states last week, and the quarantines against yellow fever were at once taken off nearly everywhere. The Louisiana State Board of Health removed all its restrictions on Oct. 22. The Governor of Alabama lifted the quarantines against the adjoining states on Thursday, and the city of Memphis relaxed its restrictions on Sunday. The Southern Railway announced the resumption of its through car lines from the North on Monday of this week. The Illinois Central has restored practically all of its local passenger and freight trains. On this, as on most of the other important lines this side of the Mississippi River, through passenger and through freight trains have been running regularly all the time.

#### Disastrous Collision in England.

Press dispatches of Oct. 17 report a collision between a passenger train and a freight on the Great Central Railway near Barnet, 11 miles north of London, in which nine persons were killed and 13 or more seriously injured. The accident occurred in the evening. The express train was moving at the rate of 60 miles an hour and struck a freight train which was switching on the main track.

#### Decision Against the Pullman Company.

The Supreme Court of Illinois has decided in favor of the state in the suit instituted by Attorney General Moloney several years ago to compel Pullman's Palace Car Company to abandon those departments of its business which are not authorized by its charter, such as dealing in real estate, selling gas, water and heat, making bricks, etc. Among the properties held by the company and complained of in the suit are the following:

The Pullman block on Michigan avenue, Chicago; the town of Pullman, including buildings, which are rented, furnishing homes to 12,000 people; all the streets and alleys of Pullman, the sewers, school houses, two churches, a theatre, a market hall, the Arcade Building, the Hotel Florence, a gas plant, the water works; a large number of cars upon which liquors are sold; large bodies of vacant land; the stock of the Pullman Iron & Steel Company; the stock of the Union Foundry; the stock of the Pullman Car Wheel Company; the stock of the Southern Pullman Palace Car Company. It was further generally alleged that the company exercises municipal power in the town of Pullman.

#### Wilmington Harbor Improvements.

General W. F. Smith, United States Engineer at Wilmington, received notice Oct. 20 that the contracts for improving the Wilmington harbor had been awarded to John J. Fitzpatrick of Plattsburgh, N. Y., to remove the rock, and to the New York Dredging Company, to remove the dirt and mud. Mr. Fitzpatrick's bid was \$7.13 per cu. yd., and the bid of the New York Dredging Company was 12½ cents per cu. yd. The work of removing the rock will be commenced within 30 days, and the dredging must commence within 60 days, and be completed before Jan. 1, 1899. The total cost will be about \$200,000.

#### The Pennsylvania Station at Jersey City.

The Pennsylvania Railroad has completed plans for the rebuilding of the passenger station at Jersey City, which was destroyed by fire last winter. Besides the restoration of the waiting room, the train shed will be extended 125 ft. toward the river, making it 777 ft. long. It is 256 ft. wide. The new waiting room will be farther south than the old one, and passengers reaching the station by ferryboat from New York will be able to go directly to the trains and they will have to walk a much shorter distance than at present.

The estimated cost of the improvements is \$400,000. The main waiting room will be 80 ft. x 97 ft., and include telegraph, telephone and ticket offices. The restaurant and dining rooms will each cover a space 40 ft. x 65 ft. The frame of the station is to be steel, with copper sheathing outside, and the floors will be cement.

#### Schuylkill and Delaware Channels.

The Philadelphia Public Ledger of Oct. 19 publishes a report of the condition of work on the improvement of the Schuylkill and Delaware rivers. The International Contracting Co., which has the contract

for dredging the channel of the Schuylkill River, is proceeding rapidly with the work. An appropriation of \$45,000 is available under the contract with the company, which at its bid will pay for the dredging of about 150,000 cu. yds. of material. Work was commenced under this contract about the middle of August, and up to Sept. 30, 60,000 cu. yds. of material were removed. Work began where the Philadelphia Public Works Company left off, when the money available under its contract gave out. One dredge is now working opposite Point Breeze, and another above Point Breeze. It is expected that the channel will be dredged one mile under this contract. The depth will be 20 ft. and 22 ft.

It is estimated that there are about 2,500 cu. yds. of rock yet to be removed under the contracts for the improvements at Schooner Ledge Shoal, in the Delaware River below Chester, before the work will be completed. During September 1,000 cu. yds. were removed. When the work is completed the channel at Schooner Ledge at low water will be 26 ft. deep and 600 ft. wide. The American Dredging Co. has completed its contract for dredging in the Delaware river near Greenwich Point and at other places, having dredged and placed ashore at Mud Island, below the mouth of the Schuylkill, an aggregate of 1,700,000 cu. yds. of material. Under this contract the middle ground or shoal off Greenwich Point has been removed, giving a low water depth of 26 ft., and the channel across Mifflin bar has been dredged to a depth of 26 ft. at low water and a width of 600 ft. The channel from Schooner Ledge to the lower ice breaker at Marcus Hook had been dredged to the full channel depth of 26 ft., over a width of 200 ft., when the appropriation gave out.

#### Diamond Shoals Beacon Wrecked.

Mr. H. B. Bowerman, Supervising Engineer of the Treasury Department, reported the wreck, as it was about to be anchored, of the experimental beacon which was to have marked the Diamond Shoals at Hatteras, N. C., by day. The beacon, which cost about \$25,000, was built at Baltimore by the Campbell & Zell Company, towed to Norfolk, Va., and on Saturday left for Hatteras in tow of the tug Peerless. On reaching Hatteras it was caught in a gale and sunk in sight of the shoals. The beacon was 40 ft. high and rested on pontoons. The Merritt Wrecking Co., it is stated, will try to raise the beacon. A few years ago a caisson on which it was proposed to build a lighthouse at Diamond Shoals was lost in a like manner.

#### The Victoria Jubilee Bridge.

According to the half yearly report of the Grand Trunk, the portion of the expenditure for the reconstruction of the Victoria Bridge, properly chargeable to revenue, has been fixed at £110,000. This, with the cost of renewing the bridges between Montreal and Portland, and on the Southern Division, will be charged to revenue account, spread over a period of at least five years. Considerable work will be done at once on these renewals.

### LOCOMOTIVE BUILDING.

The Norfolk & Western has ordered six heavy consolidation engines from the Baldwin Locomotive Works.

The Ahnapsee & Western has contracted with the Baldwin Locomotive Works for one eight-wheel simple engine.

It is stated that the St. Louis, Peoria & Northern is considering buying some new locomotives. We have no official information.

The Chicago, Milwaukee & St. Paul has placed an order with the Baldwin Locomotive Works for five Atlantic type compound passenger engines.

It is reported that the Santa Fe Pacific will order a number of heavy passenger engines in the near future, but we were unable to obtain official information at time of going to press.

The Baldwin Locomotive Works have received orders to build one eight-wheel simple engine for the American Sugar Co., and two for the Bridgetown & St. Andrews, both to be narrow gauge.

Regarding the locomotives for the Lake Shore & Michigan Southern mentioned in our issue of last week, we understand that 15 heavy switchers, 15 consolidation, and 15 more, probably 10-wheel, passenger engines will be ordered this year, but it is not decided just when contracts will be let.

The Cooke Locomotive & Machine Works are building one consolidation engine for the Oregon Short Line, to be an exact duplicate of those ordered about a year ago. It will have 21 in. x 28 in. cylinders, 51-in. driving wheels, and weigh 170,000 lbs., with 154,000 lbs. on the driving wheels; the boiler will be 72 in. in diameter.

The Intercolonial has asked for bids on 15 consolidation locomotives, to weigh 160,000 lbs. and have 56-in. driving wheels, the engine truck and tender wheels to be of wrought iron with Mansell fastenings. The specifications call for the following: M. C. B. automatic couplers on engines and tenders; cast steel axle boxes and cross heads; tender frames iron, with heavy 10-in. channel beams; Coffin process toughened steel crank pins and piston rods; Leach sanding devices; French springs; magna sectional boiler covering; Diamond S or Ross-Meehan brake shoes; steel cab; metallic packing.

The Mexican Central is making drawings for an experimental engine for service on a 3 per cent. grade with 20° curvature. The engine will be of the mogul type, with 20 in. x 26 in. cylinders, 55-in. drivers, driving wheel base 10 ft. (with cylinders set back under the barrel of the boiler to secure the shortest possible wheel-base), and weigh 150,000 lbs., with 130,000 lbs. on the drivers. The boiler will be of the Belpaire type, 70 in. in diameter, and the fire-box 8 ft. long. It is not decided just when the engine will be built or who will build it.

The Baltimore & Ohio Southwestern has just received from the Baldwin Locomotive Works eight simple and two compound consolidation freight engines for use on the Ohio Division between Cincinnati and Parkersburg. This portion of the road has some rather heavy grades, and these are the first heavy engines to be used on the line. It is expected they will increase the train haul about 40 per cent. The locomotives were built from designs of Super-

intendent of Motive Power Neuffer. The simple engines have 21 in. x 28 in. cylinders, and the compounds 15½ in. and 26 in. x 28 in. cylinders. In other respects the specifications are as follows: Weight of engine in working order, 152,000 lbs.; weight on driving wheels, 137,000 lbs.; total wheel base of engine, 23 ft. 6 in.; total wheel base of engine and tender, 53 ft. 5 in.; diameter of boiler at smallest ring, 66 in.; number of tubes, 236; diameter of tubes, 2¼ in.; fire-box, 114 in. long and 41 in. wide; working pressure, simple engine, 190 lbs., compound engine, 200 lbs.; total heating surface, 2,239.34 sq. ft.; diameter of driving wheels, 56 in.; diameter of truck wheels, 33 in.; tank capacity, 5,000 gals. of water and 10 tons of coal. The engines are equipped with Richardson balanced slide valves, Westinghouse brakes, Sellers' injectors, Leach's pneumatic double-sanders and pneumatic bell-ringers.

### CAR BUILDING.

The Wisconsin Central has asked bids on 1,000 box and flat cars.

It is reported that the Oregon Short Line is preparing specifications for 250 hopper-bottom cars.

Officials of the Union Pacific inform us that the road will not order additional coal cars at present.

It is reported that the St. Louis, Peoria & Northern is considering buying some cars. (See Locomotive Building column.)

We are informed that the Missouri, Kansas & Texas order for 500 more freight cars will probably not be placed before Jan. 1.

The report that the Chicago, Burlington & Quincy has increased its order for cars, referred to in our issue of Sept. 16, is officially denied.

We are officially informed that the Illinois Central is not contemplating building any new box cars at its own shops, as recently reported by a contemporary.

In regard to the rumor mentioned last week that the Toledo, St. Louis & Kansas City was considering new freight cars, we are officially advised that the report has no foundation.

The Ohio Falls Car Mfg. Co. has received an order to build 250 box and 250 gondola cars for the Ohio Falls Lumber Dispatch, specifications for which call for the car building company's standards throughout.

The Florida East Coast has ordered two more cars for passenger service, one from the Barney & Smith Car Co. and the other from Jackson & Sharp. In our issue of Sept. 23 we referred to an order for eight sleeping cars.

For some time past the Southern Pacific has been contemplating buying 10 passenger cars. We now understand that the company will shortly order 12 or 15 cars for passenger service, some, if not all, of which are to be sleeping cars. It may be that this is simply a modification of the proposed order of 10 cars.

The Louisville & Nashville has placed an order with the Mount Vernon Car Mfg. Co. for 150 box, 30 gondola and 20 flat cars, to be used on the Georgia Railroad. They will be of 60,000 lbs. capacity, and equipped with New York air brakes, Shickie, Harrison & Howard couplers, truck bolsters and spring planks and Sterlingworth brake beams. The box cars will have Winslow roofs. The gondola cars will be 36 ft. 3 in. long, with eight-door drop bottoms, and the flat cars 36 ft. 3 in. long.

The Brooklyn Heights has placed an order with the American Car Co. for 25 closed cars.

### BRIDGE BUILDING.

BUFFALO, N. Y.—The Grand Trunk Ry. of Canada intends to renew the International Bridge at Buffalo at an early date. The cost will be charged against the revenue of the International Bridge Co.

CHICAGO, ILL.—The Finance Committee of the City Council has voted an emergency appropriation of \$13,500 for the repair of bridges which are in such a dangerous condition that they have been ordered closed to traffic. The structures to be repaired are the Ninety-fifth St. and Throop St. bridges, mentioned in this column last week, and the Archer Ave., Erie and Kinzie St. bridges. Since Oct. 17 the Adams St. bridge has been swung by electricity, the motive power having been changed from a steam to an electric motor at a cost of \$1,200. All the bridges in the downtown district are now operated by electricity.

COLFAX, WASH.—The Board of County Commissioners of Whitman County will receive bids until Nov. 11 for building two bridges, one across Pine Creek and another over Union Flat Creek. Both bridges will be 18 ft. wide and will have a single span of 60 ft. John Tobin, Auditor and Clerk.

CORNING, CAL.—The Supervisors of Tehama County will build a bridge 200 ft. long over Thomas Creek at Weitemeyer crossing. W. F. Lunning, County Surveyor.

GRAND HAVEN, MICH.—The Board of Supervisors of Ottawa County have under consideration the question of building two bridges across Grand River, at an estimated cost of \$10,000 each. Charles K. Hoyt, County Clerk; Emmet H. Peck, Coopersville, Surveyor.

KANKAKEE, ILL.—The city of Kankakee will build a stone or concrete bridge, which will be about 600 ft. long and 40 ft. wide.

LEWISTON, N. Y.—Mr. Beatty, of Toronto, has given notice that application will be made on behalf of the Queenston Heights Bridge Co., at the Department of Railways and Canals at Ottawa, on Nov. 21, for the approval of the Governor in Council for an arrangement between the Queenston Heights Bridge Co. and the Lewiston Connecting Bridge Co., of New York, in relation to the bridge to be built across the Niagara River, between Queenston Heights, Ont., and Lewiston, N. Y. (Aug. 12, p. 584.)

LOGANSPOUT, IND.—Several bridges will be required on the line of the proposed Logansport & Burlington Electric Railroad. (See Electric Railroad Construction column.)



**MONTREAL, QUE.**—The Grand Trunk will renew during the next two or three years all the bridges on the section of the line between Montreal and Portland. They will be brought up to the requirements of the heaviest rolling stock and loads. At present only the bridges between Montreal and Island Pond are under renewal, in all 49, aggregating in length 4,674 ft. The most important one, that across Richelieu River, about 1,100 ft. long, was completed early this year. Riveted plate girders are used for the small streams, and the larger ones are crossed by pin-connected trusses, the spans varying in length from 100 to 160 ft. It is also determined to renew certain bridges on the Southern Division, used jointly with the Wabash Company. The report of the Grand Trunk for the half year ending June 30 says that the rebuilding of the Victoria Jubilee Bridge at Montreal has progressed satisfactorily, and it is expected that the new double track will be available for traffic by Jan. 1.

**NEW YORK, N. Y.**—The Committee of Forty, composed of citizens of Queens County, is reviewing the project to build a bridge across the East River from Long Island City to some point on Manhattan near Seventy-sixth St. Mayor Van Wyck stated to members of the committee recently that he was committed to the question of more bridges across East River, and hoped to see two such structures started while he was in office. He refused, however, to have an appropriation inserted in the budget for 1899 to cover the cost of preliminary work for any such bridges.

**ROSSLAND, B. C.**—The British Columbia Miner says that a new bridge is to be built over Porcupine Creek, which will be 200 ft. high, 700 ft. long, and which will require 1,200,000 ft. of timber.

**SARDINIA, N. Y.**—The State Railroad Commissioners have directed the town government of Sardinia to carry a proposed highway over the tracks of the Western New York & Pennsylvania by means of a bridge.

**SCRANTON, PA.**—The Mayor, City Controller and City Solicitor are to secure options of property on West Lackawanna avenue from Seventh to Ninth streets, the site of a proposed viaduct.

**SUISUN CITY, CAL.**—At a recent meeting of the Supervisors of Tuolumne County it was decided to leave all questions regarding the proposed bridge over Putah Creek to the incoming Board of Supervisors.

**TACOMA, WASH.**—Press reports state that the City Council has decided to rebuild the Tacoma Ave. bridge, which was destroyed by fire.

**TAUNTON, MASS.**—The East Taunton Electric Ry. has secured a license from the Massachusetts Harbor and Land Commissioners to strengthen the Neck of Land bridge for its new line.

**UTICA, N. Y.**—The Utica Belt Line R.R. Co., Utica, N. Y., is building a new riveted lattice bridge having a span of about 75 ft. The bridge is known as the Half-way Bridge. It is to be all steel except the cross ties on which the rails rest. The Berlin Iron Bridge Co., East Berlin, Conn., has the contract for furnishing and erecting the steel work.

**WABASH, IND.**—The Cleveland, Cincinnati, Chicago & St. Louis has completed its long bridge across the Wabash River at this point. The bridge, which has been a year in building, consists of four spans and cost \$60,000.

**WEST SENECA, N. Y.**—The Buffalo, Rochester & Pittsburgh has petitioned the State Railroad Commissioners, praying that the Ridge Road, a highway in West Seneca, shall be carried over the tracks of the company by means of a bridge.

## MEETINGS AND ANNOUNCEMENTS.

### Dividends.

Cincinnati, Hamilton & Dayton.—Quarterly, preferred 1½ per cent., payable Nov. 3.  
Nashville, Chattanooga & St. Louis.—Quarterly, 1 per cent., payable Nov. 1.  
Georgia Southern & Florida.—First preferred, 5 per cent.; second preferred, 3 per cent., payable Nov. 1.  
Lake Erie & Western.—Quarterly, preferred, 1½ per cent., payable Nov. 15.  
Pittsburgh, Virginia & Charleston.—Two and one-half per cent., payable Nov. 1.  
Sunbury, Hazleton & Wilkesbarre.—Four per cent., payable Nov. 1.

Columbus (O.) St.—Quarterly, 1 per cent., payable Nov. 1.

Dry Dock, East Broadway & B. (N. Y.).—Quarterly, 1½ per cent., payable Nov. 1.

Exeter (N. H.) St.—Three per cent., payable Oct. 31.

### Technical Meetings.

Meetings and conventions of railroad associations and technical societies will be held as follows:

American Society of Civil Engineers.—Meets at the house of the Society, 220 West Fifty-seventh street, New York, on the first and third Wednesdays in each month at 8 p. m.

Association of Engineers of Virginia.—Holds its formal meetings on the third Wednesday of each month from September to May, inclusive, at 710 Terry Building, Roanoke, at 5 p. m.

Association of Railway Superintendents of Bridges and Buildings.—Eighteenth annual convention, Murphy's Hotel, Richmond, Va., from Oct. 18 to 20.

Boston Society of Civil Engineers.—Meets at 715 Tremont Temple, Boston, on the third Wednesday in each month at 7.30 p. m.

Canadian Society of Civil Engineers.—Meets at its rooms, 112 Mansfield street, Montreal, P. Q., every alternate Thursday at 8 p. m.

Central Railway Club.—Meets at the Hotel Iroquois, Buffalo, N. Y., on the second Friday of January, March, May, September and November, at 2 p. m.

Chicago Electrical Association.—Meets at Room 1737, Monadnock Building, Chicago, on the first and third Fridays of each month at 8 p. m. J. R. Cravath, secretary.

Civil Engineers' Club of Cleveland.—Meets in the Case Library Building, Cleveland, O., on the second Tuesday in each month at 8 p. m. Semi-monthly meetings are held on the fourth Tuesday of each month.

Civil Engineers' Society of St. Paul.—Meets on the first Monday of each month except June, July, August and September.

Denver Society of Civil Engineers.—Meets at 3 Jacobson Block, Denver, Col., on the second Tuesday of each month except during July and August.

Engineers' Club of Cincinnati.—Meets at the rooms of the Literary Club, 25 East Eighth street, on the third Thursday of each month, excepting July and August, at 7.30 p. m.

Engineers' Club of Columbus (O.).—Meets at 12½ North High street on the first and third Saturdays from September to June.

Engineers' Club of Minneapolis.—Meets in the Public Library Building, Minneapolis, Minn., on the first Thursday in each month.

Engineers' Club of Philadelphia.—Meets at the house of the Club, 1123 Girard street, Philadelphia, on the first and third Saturdays of each month at 8 p. m., except during July and August.

Engineers' Club of St. Louis.—Meets in the Missouri Historical Society Building, corner Sixteenth street and Lucas place, St. Louis, on the first and third Wednesdays in each month.

Engineers' Society of Western New York.—Holds regular meetings on the first Monday in each month, except in the months of July and August, at the Buffalo Library Building.

Engineers' Society of Western Pennsylvania.—Meets at 410 Penn avenue, Pittsburgh, Pa., on the third Tuesday in each month at 7.30 p. m.

Locomotive Foremen's Club.—Meets every second Tuesday in the clubroom of the Correspondence School of Locomotive Engineers and Firemen, 335 Dearborn street, Chicago.

Montana Society of Civil Engineers.—Meets at Helena, Mont., on the third Saturday in each month at 7.30 p. m.

New England Railroad Club.—Meets at Pierce Hall, Copley Square, Boston, Mass., on the second Tuesday of each month.

New York Railroad Club.—Meets at 12 West Thirty-first street, New York City, on the third Thursday in each month at 8 p. m., excepting June, July and August.

Northwest Railway Club.—Meets on the first Tuesday after the second Monday in each month at 8 p. m., the place of meeting alternating between the West Hotel, Minneapolis, and the Ryan Hotel, St. Paul.

Northwestern Track and Bridge Association.—Meets at the St. Paul Union Station on the Friday following the second Wednesday of March, June, September and December, at 2.30 p. m.

St. Louis Railway Club.—Holds its regular meeting on the second Friday of each month at 3 p. m.

Southern and Southwestern Railway Club.—Meets at the Kimball House, Atlanta, Ga., on the second Thursday in January, April, August and November.

Technical Society of the Pacific Coast.—Meets at its rooms in the Academy of Sciences Building, 819 Market street, San Francisco, Cal., on the first Friday in each month, at 8 p. m.

Western Foundrymen's Association.—Meets in the Great Northern Hotel, Chicago, on the third Wednesday of each month. A. Sorge, Jr., 1533 Marquette Building, Chicago, is secretary.

Western Railway Club.—Meets in Chicago on the third Tuesday of each month at 2 p. m.

Western Society of Engineers.—Meets in its rooms on the first Wednesday of each month at 8 p. m., to hear reports and for the reading and discussion of papers. The headquarters at the Society are at 1736-1739 Monadnock Block, Chicago.

### Central Railway Club.

The Central Railway Club will meet Friday, Nov. 11, at Buffalo, N. Y. In the morning the shops of the New York Central and the Delaware, Lackawanna & Western, at East Buffalo, will be visited, and the business meeting will be held at the Hotel Iroquois at 2 p. m.

The following reports of committees will be received: "Perfection of top-hinged oil-box lids, so as to more completely exclude dust from journal boxes, and the relation of a tight-fitting lit to the cost of lubrication and number of hot boxes." Committee: Messrs. H. C. McCarty, E. D. Bronner and J. R. Petrie. "The most desirable material for driving boxes, and should they be solid, or have a shell bearing?" Committee: Messrs. E. A. Miller, A. M. Waitt and John Hawthorne.

The report of the committee, consisting of Messrs. G. W. West, John Mackenzie and John Magarvey, entitled, "Which is the more economical, a single exhaust nozzle or a double nozzle, and what should be the ratio between the heights of the nozzle and the radius of the boiler?" will be discussed.

### Western Railway Club.

A meeting of the Western Railway Club was held Tuesday afternoon, Oct. 18, at the Auditorium Hotel, Chicago. The names of 10 new members were read by the Secretary. The Board of Directors reported that it had received the report of the Library Committee containing an estimate of the cost of maintaining the Club Library during the coming year, and that \$400 had been appropriated to meet these expenses.

### Standard Knuckle.

Mr. Peter H. Peck, Master Mechanic of the Chicago & Western Indiana, then read a paper entitled, "The Adoption of a Standard Knuckle." In this paper it was shown that there are now in use 77 different couplers and 93 different styles of knuckles, and in only a few cases will these knuckles interchange one with another. The cost to the railroads for keeping on hand a stock of these knuckles to replace breakages was also shown. Mr. Peck stated that his records, for the past six and one-half years, show a decrease in the number of knuckles broken, although in this time the number of M. C. B. couplers in use has greatly increased. Some of the objections which have been raised to the M. C. B. coupler, such as crowding the wheel flanges against the rails, insufficient strength for 80,000 and 90,000 lbs. capacity cars, and difficulty of coupling on curves are not borne out by Mr. Peck's experience. It is urged that the M. C. B. Association adopt a standard knuckle or several knuckles which will interchange one with another as soon as possible.

Mr. Ira C. Hubbell, Purchasing Agent of the Kansas City, Pittsburgh & Gulf, favored the adoption of a standard knuckle, and also that each maker be obliged to quote a uniform price for couplers to all roads, whether large or small.

Mr. Gustav Giroux, of the Chicago, Burlington & Quincy, called attention to the importance of buying couplers and knuckles under specifications and tests, that better workmanship should be required in the construction and fitting of the parts; a cotter should be put through the end of the pivot pin, and that the allowable amount of variation from the standard

contour for couplers in service should be determined and the couplers inspected for wear at interchange points.

Mr. A. M. Waitt thought it unlikely that a standard knuckle or knuckles could be adopted without making the entire coupler standard, and thought that by adhering to rigid specifications the best couplers could be retained, while the poor ones would go out of the market. Mr. F. A. Delano proposed that the several railroad clubs be requested to present the subject of greater uniformity in M. C. B. couplers for discussion, so as to bring out the opinion of a large number of railroad men. On a motion a committee was appointed consisting of Messrs. F. A. Delano, P. H. Peck, J. N. Barr, J. Mackenzie and T. Eldes, to consider the question of M. C. B. couplers and report at a future meeting.

The question, "What is the best disposition to be made of the exhaust from the air-pump?" was then discussed. Different members had tried piping the exhaust so as to discharge into the front end, the firebox, the ashpan, beneath the saddle casting, into the tank, and in one case the exhaust steam was used to heat a two-car train in winter. Mr. E. M. Herr described an arrangement of pipes within the tank and opening at the rear of the tender whereby the exhaust steam was condensed and discharged onto the track after heating the water in the tender; this arrangement had worked satisfactorily on the Northern Pacific.

It was decided that the Club would not have an annual banquet this year.

### Engineers' Society of Western Pennsylvania.

The Engineers' Society of Western Pennsylvania held its regular scientific meeting Tuesday evening, Oct. 18, in the Society's house, 410 Penn avenue, Pittsburgh, Pa.

The paper of the evening was read by Mr. E. B. Taylor, Superintendent of Transportation on Pennsylvania Lines West of Pittsburgh. The subject was "Transportation of Iron Ore." This paper was the first of a series of papers which will be read at the Engineers' Society during this and next year. The subjects of the other papers are as follows: "Manufacture of Pig Iron;" "Foundry Practice;" "Malleable Castings;" "Wrought Iron Making;" "Bessemer Steel, Acid and Basic;" "Open Hearth Steel, Acid and Basic;" and "Crucible Steel." The authors of these papers will be the chief authorities in each branch; and it is expected that this series of papers will be one of the most valuable ever published on the subject of iron manufacture.

Mr. Taylor's paper contained a great deal of valuable statistical information and was illustrated with numerous drawings, blue prints, and photographs of docks and machinery used in handling the ore.

The Society has made a regular feature of providing lunches for the members after its meetings, when the discussions are informally continued.

### International Railway Young Men's Christian Association.

The ninth international conference of this Association was opened at Fort Wayne, Ind., on the evening of Oct. 20. About six hundred delegates attended, and sessions were held each day and evening until Oct. 23, when the conference adjourned. The time and place for the next meeting will be settled by the International Committee. At the first session on Thursday evening, the 20th, an address of welcome was made by the Rev. D. W. Moffat, of the First Presbyterian Church, and J. H. Canfield, LL. D., President of Ohio University, Columbus, also made an address. On Friday morning the regular programme commenced, Mr. Robert Quayle, Superintendent of Motive Power of the Chicago & Northwestern, presiding. Papers were read by Mr. A. M. Waitt, General Master Car Builder of the Lake Shore & Michigan Southern, and by W. E. Feno and D. A. Budge of Montreal. The programme also included an address by Joseph Ramsey, Jr., Vice-President and General Manager of the Wabash, by Mrs. Larimere of London, and others.

### Western Society of Engineers.

The Western Society of Engineers held an informal meeting Friday evening, Oct. 21, in the Society rooms, Monadnock Block, Chicago, to which the members were invited to bring their friends and ladies. Mr. George S. Morison gave a lecture on "Masonry," which was illustrated by stereopticon views. The subject was treated in a popular way, as the lecture was originally intended for a student audience, although containing many suggestions and much information of value to practicing engineers. This will be published in full in a future number of the Society Journal.

The next meeting will be Wednesday evening, Nov. 2, when Mr. J. W. Beardsley will read a paper entitled "Construction of Retaining Walls for the Sanitary District, Chicago."

### Chicago Electrical Association.

The Chicago Electrical Association held a meeting Friday evening, Oct. 21, in the Monadnock Block, Chicago. Mr. W. B. Hale, of the Testing Department of the Western Electrical Co., read a paper entitled "Practical Points on Electrical Measurements." The next meeting will be Nov. 4, when a paper will be read by Mr. George A. Damon, "The Electrical Equipment of a Model Printing Establishment."

### American Society of Civil Engineers.

At the meeting of Oct. 19 the Secretary announced that the Board of Direction had appointed the following members as a committee to recommend the awarding of prizes: Messrs. Charles S. Gowen, George E. Evans and E. C. Shankland.

It is announced that up to the date of the publication of the last proceedings (October) 347 votes had been received on the question of the Rail Joint Committee. At least 213 more votes must be received before the ballots can be canvassed. If the blanks and envelopes sent out Sept. 10 are lost or mislaid others may be had by applying to the Secretary.

The Society is invited to attend the next regular meeting of the Architectural League of New York Nov. 1, 8.30 p. m., at 215 West 57th St., opposite the Society house. The topic to be discussed is the "Treatment of the Water Fronts of New York City," and members of the Society are asked to take part in the discussion of this important subject. They are also invited to attend the usual subscription dinner of the League at 6.30 p. m.

The informal topical discussion on Road Building, which took place at the meeting of Sept. 21, is printed in the October proceedings, and this discussion will be continued at the meeting of Nov. 2. It has so far been one of the most interesting discussions recently brought out in the Society.



At the meeting of Nov. 16 Mr. Henry B. Seaman's paper, "The Launhardt Formula and Railroad Bridge Specifications," will be presented. It is printed in the October Proceedings issued this week.

#### Engineers' Club of St. Louis.

The 47th meeting was held Oct. 19 at 8 p. m., with President Bryan in the chair. Twenty-six members and nine visitors were present.

Mr. S. Bent Russell moved that the members of the Board of Managers of the Association of Engineering Societies representing the Engineers' Club of St. Louis be instructed to bring before the Board of Managers the question of publishing annually in the Journal a list of all the members of all the clubs belonging to the Association. After some discussion this motion was carried.

The paper of the evening, by Mr. B. H. Colby, was then read. It was entitled "Repairs to the Mill Creek Sewer." A sketch of the history of this sewer was given. Its section is 20 ft. x 15 ft., and its present length is about 25,000 ft. The present dry weather flow is about 40,000,000 gals. It was begun in 1860, and has been built by piecemeal. The sewer was originally built on a timber bottom, and the weight of the side walls has forced up the timber under the center of the sewer. The timber is now being replaced by a concrete inverted arch, and the methods employed to effect these repairs were described. A large number of lantern slides were used to illustrate the subject.

The paper was discussed by Messrs. Moore, Pitzman, Ockerson and Holman.

#### PERSONAL

—Mr. R. A. McDonald has received the appointment as Manager of the Memphis Car Service Association.

—Mr. E. C. Palmer, General Manager of the Cleveland Standard Tool Company, died at Stockbridge, Mass., Oct. 13.

—Mr. G. D. Churchward, Locomotive Superintendent of the Imperial Chinese Railways, has resigned his position to join a large railroad concern in England.

—Chief Engineer Philip Inch, U. S. N., died from neuralgia of the heart at Saratoga, Oct. 18. He was 62 years old, and was appointed Chief Engineer in 1863.

—Mr. W. G. Sargent, who was General Passenger Agent of the Pittsburgh, Shenango & Lake Erie Division before the road passed into the control of the Carnegie interests, died Oct. 21.

—Dr. John M. Gregory, the first President of the University of Illinois, died at Washington, D. C., Oct. 19, aged 76 years. Dr. Gregory was a native of New York state, and was graduated from Union College in 1846.

—Mr. John H. Dialogue, senior member of the firm of Dialogue & Son, iron ship builders of Camden, N. J., died Oct. 23, at the age of 70. He built many Government vessels of the smaller sort, of which the gunboat Princeton is an example.

—Mr. Wm. M. Greene, who will shortly assume the duties of Vice-President of the Baltimore & Ohio Southwestern, has been General Manager of the Baltimore & Ohio since March, 1896. Previous to his connection with that road Mr. Greene was General Manager of the Cincinnati, Hamilton & Dayton. He was born in Athens, O., in 1858, and entered railroad service as clerk in the General Freight and Passenger office of the Columbus & Hocking Valley in 1873.

—Mr. William B. Snow, Master Mechanic of the Illinois Central from 1875 to 1891, died at his home in Chicago, Oct. 20. Mr. Snow was born in Bellows Falls, Vt., in 1821, and had been in railroad service since 1844. He was first connected with the Western R.R. of Massachusetts, and in 1850 became foreman of the American Car Co. at Humphreysville (now Seymour), Conn. In 1852 Mr. Snow went to Chicago and contracted to build six coaches for the Chicago & Galena Union, the nucleus of the Northwestern system, after which he contracted to build the coaches for the American Car Co. At the expiration of this contract, the company, in 1857, sold its plant to the Illinois Central, with which Mr. Snow then began the connection which continued, with one interval, until 1891, when he retired from active work.

—Mr. Russell Harding, who was elected Vice-President of the St. Louis Southwestern, has been General Superintendent of the Great Northern since February, 1897. In 1894 Mr. Harding became connected with the Great Northern as Superintendent of the Dakota Division, and in 1896 he was appointed General Superintendent of the Western District at Spokane, Wash. Four months afterwards he became Assistant General Superintendent. Mr. Harding began his railroad service as timekeeper and paymaster for his father, who was a railroad contractor. He was born in Springfield, Mass., in 1856. His first position of prominence was that of Assistant Engineer in the construction of the International Great Northern of Texas, which position he held from 1880 to 1886. He then became Superintendent and Engineer of the lines in Southern Kansas of the Missouri Pacific. He held that position until 1894, when he became connected with the Great Northern.

—Mr. James Tillinghast died at his home in Buffalo, N. Y., Oct. 25, at the age of 76. He was born in Cooperstown, N. Y., and entered railway service as fireman on the Utica & Schenectady R.R., now a part of the New York Central. In a few years he became Master Mechanic and Assistant Superintendent of the Rome, Watertown & Ogdensburg. In April, 1856, he was appointed Superintendent of Motive Power and Assistant General Superintendent of the Toronto Northern from Toronto to Collingwood, Ont., now a part of the Grand Trunk system. He remained in this position for eight years, and then became connected with the Buffalo & Erie Railway as Assistant General Superintendent. From 1865 until 1869 he held the position of Superintendent, Western Division of the New York Central, becoming General Superintendent in 1869. Mr. Tillinghast held this position for 12 years, when he resigned to become Vice-President of the New York Central Sleeping Car Co.

—The resignation of Captain W. W. Peabody, Vice-President and executive head of the Baltimore & Ohio Southwestern, has been announced. The step was taken at the advice of his physicians, who for some time had warned him that unless he ceased active work he would become blind. Two months ago

the offices of Vice-President and General Manager were separated and he was relieved of the duties of General Manager. In September last the Assistant Purchasing Agent was promoted to the position of Purchasing Agent, which Captain Peabody also held. It was thought that by thus relieving him of his more onerous duties, he would be able to maintain his position as executive head of the company. Captain Peabody has been Vice-President since Jan. 4, 1890, and he became Vice-President and General Manager when the Ohio & Mississippi R.R. was consolidated with the Baltimore & Ohio Southwestern. He was born in Gorham, Me., in 1836, and entered railroad service in 1852.

#### ELECTIONS AND APPOINTMENTS.

Baltimore & Ohio.—Lorenzo Norvell has been appointed Assistant Engineer to G. E. Owen, Division Engineer Maintenance of Way, with headquarters at Martinsburg, W. Va. He succeeds J. L. Crider, promoted. (Oct. 7, p. 730.)

Baltimore & Ohio Southwestern.—The office of Vice-President, lately held by W. W. Peabody, will be filled by Wm. M. Greene, General Manager of the Baltimore & Ohio.

Canada Atlantic.—W. H. Smith has been appointed General Auditor, with headquarters at Ottawa, Ont.

Chicago Great Western.—T. G. Spillman has been appointed Superintendent of Dining Car Service, succeeding the late John Colley. The office of General Baggage Agent of the company, held by Mr. Colley, has been merged into that of the General Passenger Department.

Chicago Junction.—F. M. Hill, heretofore Car Accountant, has been appointed Superintendent of Transportation, with office at the Union Stock Yards, Chicago, and the office of Car Accountant has been abolished.

Coahuila Central.—Wm. McKenzie, heretofore Traffic Manager of the Monterey & Mexican Gulf, has been appointed General Manager of this road, now under construction.

Detroit & Lima Northern.—C. A. Chambers, heretofore General Freight and Passenger Agent, will assume the duties of the General Freight Agency, since the appointment of Ralph Cables as General Passenger Agent. His headquarters will be at Detroit, Mich. (Oct. 21, p. 767.)

El Paso & Northeastern.—H. A. Summer, Chief Engineer of the Alamogordo & Sacramento Mountain, a subsidiary line of the E. P. & N., has been appointed Chief Engineer of the main line also, with headquarters at Alamogordo, N. M.

Fremont, Elkhorn & Missouri Valley.—Frank A. Harmon, who has been Division Freight Agent at Deadwood, S. D., has been appointed Superintendent of the Black Hills Division, with headquarters at Chadron, Neb. He succeeds E. C. Harris, resigned. G. G. Dennis succeeds Mr. Harmon at Deadwood.

Georgia & Alabama.—The headquarters hitherto located at Americus, Ga., are to be removed to Savannah, Ga. The company has given notice to the Secretary of the State of Georgia to amend its charter, changing its principal office from Americus to Savannah.

Grand Trunk.—Peter Brass has been appointed Building Inspector, with headquarters at Hamilton, Ont. E. D. Jameson has been appointed Master Mechanic, Western Division, with headquarters at Battle Creek, Mich.

F. C. McCleod, foreman of the shops at Toronto, Ont., has been transferred to London, Ont.

C. S. Cunningham, Trainmaster at London, Ont., has resigned.

Great Northern.—At the annual meeting held in St. Paul, Minn., Oct. 19, Jas. N. Hill was elected a Director, succeeding Sir Donald Smith.

Hutchinson & Southern.—W. W. McCormick has been appointed Superintendent of Telegraph, with headquarters at Hutchinson, Kan.

Illinois Central.—The office of Division Superintendent A. H. Egan, and Train Dispatcher W. J. Davis, will be moved from Henderson to Evansville, Ind., Nov. 1.

Intercolonial.—W. C. Robertson has been appointed Division Freight Agent at St. John, N. B. D. A. Storey has been appointed Division Freight Agent at Halifax, N. S.

R. H. Cushing has been appointed Assistant Engineer. He will have charge of the terminal works at St. John, N. B. Wm. Rennels has been transferred as Superintendent to the Halifax & St. John District, with headquarters at Truro, N. S. H. B. Fleming has been appointed Chief Train Dispatcher at Moncton, succeeding G. M. Jarvis, promoted. (Oct. 21, p. 767.)

Lehigh Valley.—The office of Superintendent of the Mahanoy & Hazleton Division, held by J. Keith, has been transferred from Delano to Hazleton, Pa.

Louisville, Evansville & St. Louis.—Edward T. Workman has been appointed General Foreman of the shops at Princeton, Ind.

Maine Central.—At the annual meeting held in Portland, Me., Oct. 19, Geo. F. Evans of Portland, Me., was elected a Director, succeeding the Hon. Richard Olney, Boston, resigned.

Munising.—Robert E. Morrison has been elected President, succeeding D. P. Eels of Cleveland, O. His headquarters will be at Munising, Mich.

New York Central & Hudson River.—The Map Department will be consolidated with the department of maintenance of way, under charge of W. J. Wilgus, Engineer Maintenance of Way, with headquarters at New York.

New York, Chicago & St. Louis.—M. C. Baker, District Passenger Agent at Fort Wayne, Ind., will be retired Nov. 1, and the duties of the position assumed by W. B. Jerome, General Western Passenger Agent of the New York Central & Hudson River.

Oregon Railroad & Navigation Co.—Henry Pape has been appointed Chief Engineer of the water lines in place of Reuben Smith, with headquarters at Portland, Ore.

Oregon Short Line.—R. W. Brady, Chief Train Dispatcher of the Utah Division, has been appointed Chief Train Dispatcher of the Montana Division, with headquarters at Pocatello, Idaho.

Pecos Valley & North Eastern.—E. O. Faulkner, General Manager, with headquarters at Eddy, N. M., has resigned. He is succeeded by D. H. Nichols.

Pennsylvania.—A. Zollinger, Assistant Supervisor at Spruce Creek, Pa., has been appointed Supervisor at Norristown, Pa., succeeding A. B. Cuthbert. Mr. Cuthbert has been appointed Supervisor of the Midletown, Pa., Subdivision, succeeding V. S. Doeblir, who has been appointed Supervisor, with headquarters at New Florence, Pa. W. N. Hayes, heretofore Supervisor at New Florence, has been appointed Tie Inspector, with headquarters at Pittsburgh. S. K. Hart has been appointed Foreman of Engines of the Altoona & Cambria and the Clearfield divisions.

Pittsburgh, Lisbon & Western.—K. E. Baringer has been appointed General Manager, with headquarters at Lisbon, O. He succeeds C. H. Smith, resigned. Mr. Baringer was heretofore General Freight and Passenger Agent, with headquarters at the same point.

St. Joseph & Grand Island.—At the annual meeting A. L. Mohler, President of the Oregon R.R. & Navigation Co., was elected a Director, succeeding E. McNeill.

St. Louis & San Francisco.—A. Scherrey has been appointed Division Roadmaster, with headquarters at Fort Smith, Ark., succeeding T. F. Riley, resigned.

We are officially informed that J. C. Ivers, General Agent at Cincinnati, O., has reconsidered his decision to resign and will remain.

St. Louis, Iowa & Northern.—The officers of this company, referred to in the Construction column, are: President, L. J. Sawyers, Eldon; General Superintendent, J. E. Houghland, Eldon; Chief Engineer, C. J. DuBois, Macon, Mo.

St. Louis Southwestern.—At the annual meeting held in New York, Oct. 24, Col. S. W. Fordyce declined a re-election, and Edwin Gould, heretofore Vice-President, was elected in his place. Russell Harding, General Superintendent of the Great Northern, was elected Vice-President to succeed Mr. Gould. He will have his headquarters at St. Louis, Mo.

Southern.—W. J. Francis has been appointed Trainmaster at Columbus, Miss., succeeding W. S. Hobbs, resigned.

Southern Pacific.—W. H. Russell, heretofore Traveling Engineer, has been appointed Assistant Master Mechanic, with headquarters at Oakland, Cal. J. C. Martin has been appointed Traveling Engineer, succeeding Mr. Russell, with headquarters at Los Angeles, Cal. Howard J. Lyons, General Freight Agent at New Orleans, La., has resigned. The duties of the position will be assumed for the present by W. H. Masters, Assistant Traffic Manager at New Orleans.

Spokane Falls & Northern (Great Northern).—Wm. Coyne has been appointed Chief Train Dispatcher, with headquarters at Spokane, Wash.

Sylvania Railroad.—W. M. Hobby, General Freight and Passenger Agent, has been appointed Superintendent, with headquarters at Sylvania, Ga. W. H. McLaws has been appointed General Attorney, with headquarters at Savannah, Ga.

Wabash.—Chas. H. Felske, foreman of the Montpelier shops, Montpelier, O., has been transferred to Delray, Mich., in place of H. K. Mudd, resigned. Geo. F. Hess succeeds Mr. Felske as foreman of the Montpelier shops.

J. A. Sheperd has been appointed Assistant Chief Train Dispatcher at Decatur, Ill., succeeding W. W. Ashald.

Washington County.—A. S. Buzzell has been appointed General Passenger and Ticket Agent, with headquarters at Calais, Me.

West Shore.—William Caldwell, General Western Passenger Agent at Chicago, will be retired on Nov. 1, and his position will be abolished. Mr. Caldwell's duties will be assumed by W. B. Jerome, General Western Passenger Agent of the New York Central.

Wiscasset & Quebec.—At the annual meeting held in Wiscasset, Me., Oct. 19, Ernest F. Ayrault and Edward E. McCarney were elected Directors. Edward E. McCarney was appointed Superintendent, with headquarters at Wiscasset, Me.

Yellowstone Park.—The officers of this company, referred to in the Construction column, are: President, W. W. D. Turner; Vice-President and General Manager, Frank A. Hall; Secretary and Treasurer, J. C. Williams; General Counsel, L. A. Luce. The central office is Bozeman, Mont.

#### RAILROAD CONSTRUCTION, New Incorporations, Surveys, Etc.

BOSTON & ALBANY.—The mile of new location in Westboro, Mass., was ready for service Oct. 16. The new line eliminates three grade crossings and greatly reduces the curvature.

BUFFALO, ROCHESTER & PITTSBURGH.—The company is relaying and revising its line between Stanley, Pa., and the Clearfield & Mahoning Junction, three miles. Double track will also be laid along that portion of the line newly graded, practically taking out the curvature and greatly reducing the grade. The work is under contract and will be completed by the first of January. (Official.)

The headings of the 2,317 ft. tunnel through Simpson Hill met last week. Boring was begun May 10. It is on the extension of the Allegheny & Western, from Punxsutawney, Pa., west 98 miles toward New Castle. (Oct. 7, p. 732.)

CALUMET WESTERN.—An ordinance has been introduced into the Council at Chicago for permission to build this line from a point on the South Chicago & Southern line of the Pennsylvania Co. at Hegewisch, to run north between the Grand Calumet River and the Chicago & Western Indiana R.R., to 106th st., Chicago, to connect with the Pittsburgh,



Fort Wayne & Chicago line of the P. Co. The road when completed is to be operated jointly by the P. Co., the Michigan Central and the Chicago, Rock Island & Pacific. (May 27, p. 352.)

**CANADIAN PACIFIC.**—Track laying was begun last week on the extension of the Stonewall Branch from Stonewall, north of Winnipeg, Man., to run about 18 miles to Foxton. (Sept. 9, p. 656.)

**CANADIAN ROADS.**—The railroad charter granted some years ago for a line to Ashcroft, B. C., on the C. P. R., 204 miles east of Vancouver, to run due north 220 miles to Caribou, has been taken over by an English company, and it is stated that work is to begin at once.

**CARSON & COLORADO.**—The President writes that there is no truth in the report that this line is to be extended from the southern terminus at Keeler, Cal., south to Mojave on the Santa Fe Pacific. (Oct. 7, p. 732.)

**CHOCTAW, OKLAHOMA & GULF.**—Grading is reported begun on the proposed Choctaw & Memphis extension from Wistar Junction, Ind. Ter., east about 130 miles to Little Rock, Ark. (Oct. 14, p. 750.)

**CINCINNATI, HAMILTON & DAYTON.**—A connection between the main line and a glass works near Toledo, O., the expense of which is being paid by the proprietor of the glass works, is about completed and the track will be ready for operation within a few days. (Official.)

**CHARLESTON, CLENDENNING & SUTTON.**—Bonds to the amount of \$3,000,000 are reported sold to an English syndicate, and this road is to be extended at once from Clay Court House, W. Va., northeast 50 miles along the Elk River Valley to Sutton. The road now runs from Clay Court House west 50.8 miles to Charleston. (Dec. 31, 1897, p. 936.)

**CHICAGO, SIOUX FALLS & PACIFIC.**—Since the Sioux Falls & Pacific was incorporated (Oct. 14, p. 750) it has filed amended articles making the title of the road Chicago, Sioux Falls & Pacific. It has a capital stock of \$8,000,000, and proposes to build a line from Sioux Falls, S. D., west to the Wyoming state line. The incorporators are R. E. Woodworth, H. H. Smith, C. E. McKinney, Thos. H. Brown and B. H. Lien, of Sioux Falls.

**CLEVELAND, LORAIN & WHEELING.**—New rails are being laid, according to report, along the line between Bridgeport, O., and Wheeling, W. Va. The Bridgeport yards are also being repaired.

**COLUMBUS, MARSHALL & NORTHEASTERN.**—The route of this proposed line is from Marshall, Mich., on the Cincinnati, Jackson & Mackinac, to run north via Olivet, Kalamazoo, Vermontville, Bismarck, Sunfield, Lyons, Muir, Matherton, Hubbardston, Carson City, Gardenville, Sumner, Alma and Midland to Bay City. Surveys are completed from Marshall to Sumner and the company expects to build the first section this fall, a preliminary contract having been entered into for that purpose. About 90 miles of grading is practically finished, but no work is in progress at present. The line passes through a rolling country of medium difficulty. The maximum grade is 1 per cent., and the maximum curvature 4°. Negotiations are in progress for 14,000 tons of 60-lb. rails for the first section. H. E. Hollon is President and C. E. Sawyer, Chief Engineer, both of Marshall. (Official.)

**CRYSTAL RIVER.**—In 1893 this company laid about 40 miles of line from Carbondale, Col., up the Crystal River to Marble, and a branch from a point 13 miles from Carbondale, Col., a point on the Denver & Rio Grande, to the head of Coal Basin. At that time about 13 miles of track was laid, but the panic coming on, the enterprise was abandoned and the road not operated. The company is now completing the main line from a point 17 miles from Carbondale to a station called Redstone. This involves laying four miles of track in addition to the 13 miles already graded. Surveys are in progress for the rest of the line to ascertain the cost of completing. When the 34 miles is completed to Redstone it will be operated. Orman & Crook, of Pueblo, have the contract. The work is difficult. The bridges are already in. (Oct. 7, p. 732.) J. A. Kebler, of Denver, Col., is Vice-President and General Manager. (Official.)

**DALLASTOWN.**—This company was incorporated in Pennsylvania Oct. 10, with a capital stock of \$10,000, to build a line one mile long from the Borough of Dallastown to the York Southern. Directors are: Daniel F. Lefean (President), Henry W. Weber, George E. Neff, C. H. Dempwolf, Charles I. Nes, York; J. C. Heckert, Charles Kholer, J. W. Minnich and Jonathan Geesey, Dallastown.

**EASTMAN & OCMULGEE RIVER.**—This company has been formed with a capital stock of \$25,000 to build a line from Eastman, Ga., south 18 miles to connect with the Georgia & Alabama. J. B. Caldwell of Eastman is among those interested.

**FORT DODGE & OMAHA.**—Grading is reported begun on this line from Fort Dodge, Ia., southwest 125 miles to Omaha. J. F. Duncombe of Fort Dodge is among the incorporators and it is stated that the Illinois Central is back of the project. (Sept. 23, p. 696.)

**FORT WORTH & NORTHWESTERN.**—Mayor B. B. Paddock of Fort Worth, Tex., is reported to have placed bonds in England for building this line from Fort Worth northwest about 120 miles to Throckmorton. (April 8, p. 265.)

**GREAT NORTHERN.**—Grading is completed for the entire distance from Akely, Minn., north to the connection of the new Fosston branch at Cass Lake. Track laying is in progress and about six miles is completed. Work is about done on the bridges and trestles. A. Guthrie & Co., of St. Paul, have the contract. (Official.)

Grading is reported begun on the connecting line from Coon Creek, Minn., north about 50 miles via Cambridge to a point near Mora, on the Eastern Minnesota line. When completed, this cut-off will shorten the distance between St. Paul and Duluth by about 30 miles. (Oct. 14, p. 750.)

**GUADALUPE VALLEY.**—A contract is reported made between the city of Yoakum, Tex., and the Guadalupe Valley Ry. Construction Co. for completing this road to Yoakum. According to last report, grading was completed from Alligator, Tex., for 78 miles toward Yoakum. Uriah Lott of Victoria, Tex., is President. (Sept. 2, p. 639.)

**HAWKINSVILLE, FITZGERALD & GULF.**—This company is being organized in Georgia to build a line from Hawkinsville, to run south via Fitzgerald to a point in Florida on the Gulf of Mexico. H. V. Bowen of Lulaville, Ga., and P. H. Fitzgerald of Fitzgerald are among the incorporators.

**ILLINOIS CENTRAL.**—Surveys are completed and grading the line for a double track between Otto, Ill., and Gilman, 21 miles, is in progress. The work is light, and the maximum grade will be 26 ft., with light curvature. There is one iron bridge on the line, 96 ft. long. J. D. Lynch of Monmouth, Ill., has the contract for grading, Donald Sinclair of Kankakee, Ill., for concrete work, and the American Bridge Works is doing the bridge work. (Official.)

The improvements now in progress at East DuBuque, Ill., consist of changing the grade of the tracks at the crossing of this line and the Chicago, Burlington & Northern, to make a grade crossing to be protected by interlocking. Originally there was a difference of 4½ ft. in the elevation of the tracks of the two companies. The crossing was made by means of a jack-knife drawbridge. The work is somewhat complicated, inasmuch as the crossing on the I. C. comes between the mouth of a tunnel and a drawbridge over the Mississippi River. The work is being done by the company. (Official.)

The company bought 75 acres of land about a mile from the city for \$75,000. It is the intention to build yards on the new property. (Official.)

**IOWA CENTRAL.**—Work is in progress soon, according to report, on the proposed extension from near Oskaloosa, Ia., northwest into Des Moines. The proposed road is from a point one mile north of Oskaloosa, via Pella, to a point on the Wabash road at Cadova, and thence by trackage on that road to Des Moines. (Sept. 9, p. 656.)

**KOOTENAY VALLEY.**—This company is incorporated in Washington to take over the Nelson & Bedlington, which is building from Bonner's Ferry, Idaho, on the Northern Pacific, north along the valley of the Kootenay River to Kootenay Lake, B. C. This line will form a part of the Kootenay Railway & Navigation Company's line. The incorporators are Will H. Thompson, of Seattle, Wash.; Albert Allen, C. Shields and L. F. Gordon, of Spokane, Wash.; George Alexander, of Kaslo, B. C., and H. M. Foster, of London. (Oct. 21, p. 768.)

**LEHIGH VALLEY.**—The Street and Water Board of Jersey City passed an ordinance providing for raising the grade, so that the company might lay its tracks under Chapel Ave. This will eliminate the necessity of a grade crossing. The avenue will be spanned by a viaduct, built by the company. (Oct. 21, p. 678.)

**MEXICAN ROADS.**—Captain Porfirio Diaz, Jr., son of President Diaz, has begun survey for a line in the state of Vera Cruz, to run from Huatusco north to a point on the Inter-oceanic of Mexico.

**MIDLAND OF NOVA SCOTIA.**—The local government has decided that the Clifton end shall be via Truro, which will give the company the benefit of the \$30,000 bonus given by that city. It is stated that most of the grading between Windsor and the Shubenacadie River is completed, and that it is to be vigorously prosecuted from the other side of the river to Truro, in all 59 miles, so that trains may run to that point within a year. (Sept. 16, p. 678.)

**MINNEAPOLIS & ST. LOUIS.**—President Hawley's annual report states that during the coming year 22 miles of track will be laid with 80-lb. rail, and 22 miles of 50-lb. rail will be taken up and replaced by 60-lb. rail, to be taken from the Albert Lea Division, on which the 80-lb. rails are to be placed. The 12 miles of double track between Minneapolis and St. Paul will be relaid with 72-lb. rail. This line is operated under a lease from the Northern Pacific.

**MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.**—The extension from Kulm, N. D., west toward Bismarck is reported completed to Hebard. The new stations along the line are Lehr, Wishek, Beaver Lake, Napoleon and Braddock. It is probable that work will be suspended until spring. (Oct. 7, p. 732.)

**MISSOURI PACIFIC.**—Grading is to begin at once, according to report, on the proposed connecting line from Little Rock, Ark., west about 165 miles to Greenwood, the terminus of the Fort Smith branch. Surveys were made some time ago. (Dec. 3, 1897, p. 860.)

**NASHVILLE, CHATTANOOGA & ST. LOUIS.**—This company has begun operating the Middle Tennessee & Alabama, which was recently bought, from Fayetteville, Tenn., to Jeff, Ala., 30.2 miles. (Sept. 2, p. 639.) From Madison Cross Roads to Jeff, three miles, the track was laid several years ago, but was never put in operation. It is probable that five miles additional will be built during the year. (Official.)

**NEW ORLEANS & NORTHEASTERN.**—About 5,500 tons of 75-lb. rail will be laid along the line between Hattiesburg and Meridian, Miss. It is expected the work will be completed before the end of December.

**NEW ROADS.**—The Winston (N. C.) Chamber of Commerce, of which W. A. Blair is Secretary, has appropriated \$250 for surveying for the proposed railroad from Kernersville, a few miles east of that city, to run northeast about 30 miles to Reidsville. A company is being formed to build a line from the Norfolk & Western at Winston to connect with a point on the South Carolina state line. The state of North Carolina will supply convict labor for grading, and will build the bridges in exchange for common stock. Business men of Winston are to take \$15,000 of the stock. (Feb. 25, p. 149.)

A company is being organized in Michigan with a reported capital stock of \$2,500,000 to build a railroad from Houghton, Northern Peninsula, to run southwest 60 miles to Rockland on the Chicago, Milwaukee & St. Paul. Among those interested are the St. Mary's Canal Mineral Land Co.; Paine, Webber & Co.; Richardson, Hill & Co., of Boston; Cameron, Curry & Co., of Detroit.

**NORTHERN PACIFIC.**—Grading and bridging is finished to Elgin, 40 miles, on the extension of this line from a point near Belmont, Manitoba, west 51 miles to Hartney, on the C. P. R. Rails are laid for about 22 miles. James D. McArthur of Winnipeg has the contract for grading and track laying. (July 1, p. 485.)

Grading is reported begun on the extension of the Sykeston branch in North Dakota, from Sykeston

west about 100 miles to the Missouri River, at or near Stevenson. It is stated that 40 miles will be graded this season.

**OREGON SHORT LINE.**—The order for 10,000 tons of heavy rails has been filled. According to report, they will be laid on the main line from Glenn's Ferry, Idaho, to Huntington, Ore. Four miles of side track is being laid at Kemmerer, Wyo. (Oct. 21, p. 769.)

**PECOS VALLEY & NORTHEASTERN.**—About 60 miles to Summerfield, Tex., is being operated on the extension of this line from Amarillo, Tex., southwest 206 miles to Roswell, N. M. (Sept. 30, p. 715.)

**SABINE PASS & NORTHWESTERN.**—This company has been incorporated in Texas with a capital stock of \$400,000, to build a line from Sabine Pass on the Gulf of Mexico, to run northwest about 300 miles to Bonham.

**SACRAMENTO VALLEY.**—Surveys are reported completed for this proposed line from Kingman, Ariz., on the Santa Fe Pacific, to run northwest about 50 miles along the east side of the Sacramento Valley to White Hills. It is announced that building will begin early next month. Captain S. B. Connico of Kingman is President. (Oct. 14, p. 750.)

**SAGINAW SOUTHERN.**—Grading is reported begun on this line, recently incorporated in Arizona, to run from Williams on the Santa Fe Pacific, south about 36 miles to Jerome. It will tap a forest of pine owned by the Saginaw Lumber Co. J. C. Brown of Williams is President and General Manager, and J. B. Girard, Chief Engineer. (Oct. 7, p. 732.)

**ST. LOUIS & SOUTHWESTERN.**—The Gray's Point Terminal extension from Delta, Mo., east 16 miles to Gray's Point, on the Mississippi River, which was completed some time ago, is opened for traffic. (Apr. 29, p. 317.)

**ST. LOUIS, IOWA & DAKOTA.**—This company was incorporated in Iowa Oct. 17 as successor to the Sioux City, Chicago & Baltimore (Oct. 7, p. 732), which proposed to run a road from Sioux City southeast 512 miles to St. Louis. Permission is given to extend the line from Sioux City into South Dakota and into Minnesota. T. P. Gere of Sioux City, Ia., is President.

**ST. LOUIS, IOWA & NORTHERN.**—The route of this proposed line is from Eldon, Ia., south via Memphis, Mo., Edina, Shelbyville, Paris and Mexico, to Rhineland. Preliminary surveys have been made for the entire line and locating surveys are in progress from Eldon, Ia., to Shelbyville, 100 miles, of which 30 miles are in the state of Iowa. It is expected that grading is to begin this winter. The officers are given under Elections and Appointments.

**ST. LOUIS, OKLAHOMA & SOUTHERN.**—Surveys are completed for the entire distance on this proposed line from Claremore, I. T., on the St. Louis & San Francisco, to run west and south 200 miles to Willis on the Red River. There is a branch from Ocmulgee to Purcell, I. T., 100 miles. Grading is to begin in December. C. N. Points of Shawneetown, Okla. Ter., is among those interested. (Sept. 30, p. 715.)

**ST. LOUIS, PEORIA & NORTHERN.**—Press dispatches state that work is to begin at once on the proposed extension from Peoria, Ill., north about 90 miles to Clinton. (May 13, p. 349.)

**SHORT LINE.**—Surveys are in progress for the extension of this line from Clarksburg, W. Va., northwest through New Martinsville, about 60 miles. This company began work last year at Clarksburg. (Dec. 3, 1897, p. 860.)

**SOUTHERN PACIFIC.**—A letter from the General Manager states that this company has no intention of extending its line from San Pedro, Cal., to Redondo. (Sept. 16, p. 679.)

**SUMTER & WATEREE.**—Surveys are being made for this line from Sumter, S. C., west 15½ miles to Middleton's on the South Carolina & Georgia. Jas. D. Blanding, of Sumter, is among the incorporators. Newspaper reports state that the S. C. & G. is interested in the line, but the General Manager writes that his company has no connection. (April 15, p. 285.)

**TEXAS & PACIFIC.**—The company is building a new wharf at its New Orleans terminal, above Westwego, La. The work will be finished in time for the bulk of the cotton business of this season.

**UNION PACIFIC.**—The contract for ballasting and repairing the track between Wamego and Silver Lake, Kan., has been awarded to John K. Wright, of Junction City, Kan. The track will be raised, levelled and ballasted. It is expected the work will be done inside of four months.

**VERA CRUZ & PACIFIC.**—Surveys have been completed for 220 km. (137 miles), on this line from Vera Cruz south 333 miles via Santa Lucretia to Salina Cruz on the National Tehuantepec. Along the route already located the grade will not be over 2 per cent. This is under the concession from the Mexican Government to Alfred Bishop Mason, 7 Pine St., New York. (April 15, p. 285.)

**WHITE RIVER, LONOKE & WESTERN.**—Rails are reported laid into Lonoke on this line from Wooley, Ark., through Lonoke to Seaton. (Sept. 23, p. 697.)

**WINNIPEG & SOUTHEASTERN.**—Surveys have been made for 95 miles from Winnipeg, to a point in Manitoba, just north of Roseau, Minn. It is understood that the road will extend around the south end of the Lake of the Woods through Minnesota. This line, when completed, will be operated by the Lake Manitoba Ry. & Canal Co. (Oct. 14, p. 751.)

**WINNIPEG & STONY MOUNTAIN.**—The directors of this company, which recently obtained a charter to build a line two miles long from a point on the C. P. R., west of Winnipeg, are C. H. Campbell, D. E. Sprague, W. McKenzie, W. A. Windalt and C. H. Ederton, all of Winnipeg. (Oct. 14, p. 751.)

**YELLOWSTONE PARK.**—This company, which was recently incorporated in Washington (Sept. 30, p. 715), is to take over the property of the Gallatin R.R., now building from Three Forks, Mont., southeast. The Gallatin is to be known as the Trail Creek Division, and will be open for business about Dec. 1. The entire line is to run from Brimley, Mont., on a branch of the Northern Pacific, through Trail Creek,



Bozeman, Spanish Creek, Ferris, Hot Springs and Salesville, in all about 50 miles, with a branch from Spanish Creek to Park Terminal, on the borders of Yellowstone Park, 46 miles. The officers are given under Elections and Appointments.

### Electric Railroad Construction.

**AKRON, O.**—A trolley road is projected to run from Akron to Alliance, about 25 miles long. Hugh Berkley and C. W. Kleff, of Alliance, are interested in the matter, but it is said that they represent Cleveland interests.

**AMESBURY, MASS.**—E. R. Briggs, who is interested in the project to build an electric railroad between Amesbury, Mass., and Hampton, N. H., writes that nothing will be done in the matter until another spring. The company is not yet organized. (Feb. 25, p. 149.)

**BANGOR, ME.**—The Bangor, Hampton & Winterport Ry. will build an extension of its trolley line, it is reported.

**BIRMINGHAM, ALA.**—The North Birmingham St. RR. Co. has completed the change of motive power from steam to electricity. The road is about six miles long. G. M. Williams is General Manager.

**BUFFALO, N. Y.**—The Buffalo & Lockport Ry. Co. it is reported, has completed plans for building an extension northward from Lockport to Olcott, about 20 miles. (May 20, p. 522.)

**CHICAGO, ILL.**—The Illinois Traction Co. is reported incorporated, with a capital stock of \$10,000. The incorporators are Augustus Kelly, Thomas S. Jackson and Clara L. Clayton.

**DAVENPORT, IA.**—Local papers state that the Tri-City Ry. will make some extensive improvements. This road, which operates between Davenport, Ia., and Moline and Rock Island, Ill., was recently reorganized, and the following officers were elected: President, E. E. Cook, Davenport; Vice-President, F. C. Denkmann, Rock Island; Secretary and Treasurer, J. F. Lardner, Davenport. Directors: E. E. Cook, J. F. Lardner, Davenport; W. H. Edwards, F. C. Denkmann, Rock Island; H. A. Ainsworth, Moline. (Oct. 14, p. 752.)

**DEDHAM, MASS.**—The Norfolk Western St. Ry. Co. has petitioned the State Railroad Commissioners for permission to issue \$90,000 original stock.

**ELWOOD, IND.**—Mr. Harbit, Mayor of Elwood, and A. J. Applegate, of Perkinsville, are reported to be interested in a projected electric railroad between Elwood and Noblesville, by way of Perkinsville, 25 miles.

**LOGANSPORT, IND.**—Messrs. Kreis Bros. write in regard to the Logansport & Burlington Electric Railroad:

"No company has yet been formed. The Citizens' Association of Logansport has only been granted a franchise for the right of way. The route will be south from Logansport to Burlington, which will be the southern terminal, and north from Logansport, on the state road, to Winona. Financial arrangements have not been made, but the Citizens' Association will probably assist in forming a company. Subsidies will be voted and bonds will be negotiated. It is expected to start grading and track laying in the spring." (Oct. 21, p. 769.)

**MANSFIELD, O.**—J. P. Henry, R. E. Harwood and Jacob Laird are interested in a project to build an electric railroad in Mansfield.

**MILWAUKEE, WIS.**—It is stated that the Milwaukee & Waukesha Electric RR. will be double tracked in the spring. The road is nearly 20 miles long.

**PALMYRA, N. Y.**—An electric railroad is projected between Marion and Palmyra, about eight miles. L. Brown and C. L. Tassell, of Marion, are interested.

**PERKASIE, PA.**—The Inland Traction Co. was chartered Oct. 14, to build a line 12 miles long, from Perkassie, Bucks County, to Lansdale, Montgomery County; capital stock, \$200,000. The incorporators are John H. Pascoe, Allentown, President; J. B. Alderfer, Edwin S. Landis, Edwin H. Alderfer, Souderton, and C. F. Heckler, Quakertown, Directors.

**PINE BLUFF, ARK.**—A committee of citizens has been formed here to promote plans for an electric lighting plant and street railroad. Among those mentioned as forming the committee are Walter S. Jetter, D. C. Bell and W. H. Langford.

**RICHMOND, IND.**—Theodore Woodhurst, Henry Cutter, Frank Spinner, John Rolling and George Mashmeyer, are interested in a proposed electric railroad in Richmond.

**ROME, N. Y.**—The Rome City St. Ry. Co. is to be reorganized by Philadelphia capitalists, who have secured control. The motive power will be changed from horses to electricity, the road rebuilt and several extensions made. J. G. Lieper, G. W. Chance and T. Blume are among the Philadelphia men interested in the road.

**SHAWNEE, OKLA.**—A franchise has been given C. N. Points to build a trolley road in Shawnee.

**SUMMIT CITY, MICH.**—A company is being formed to build an electric railroad in Summit township. Among those interested are: Arthur Woodard, Ann Arbor, Mich.; Clark Cornwall, Jackson, Mich., and Walter Joslyn, Ypsilanti, Mich.

**TORONTO, ONT.**—Messrs. McPherson, Clark & Jarvis, of Toronto, have given notice that they will apply to the Ontario Legislature for an act to incorporate the Toronto Elevated Ry. Co. The plan is to build an elevated railroad and surface lines in Toronto and adjoining towns. The motive power, it is understood, will be electricity. (Mar. 18, p. 209.)

**WATERLOO, IA.**—Press reports state that the street railroad at Cedar Falls, using the Patton motor cars, has been acquired by the Waterloo & Cedar Falls Rapid Transit Co. Electricity will be substituted as motive power.

**WILMINGTON, DEL.**—The Wilmington & Brandywine Springs electric road is so far completed that it is expected operations will be begun Nov. 1. (May 20, June 17, pp. 367, 445.)

**WHITE PLAINS, N. Y.**—It is stated that the Tarrytown, White Plains & Mamaroneck Ry. Co. intends to apply for a franchise to extend its Mamaroneck

branch through Harrison to Rye, to connect with the Port Chester trolley road. This line would enable residents in the Hudson River valley to travel from Tarrytown across country to the Connecticut line.

### GENERAL RAILROAD NEWS.

#### Railroad Earnings.

Showing the gross and net receipts for the periods ending at the dates named:

	June 30.	1898.	1897.	Inc. or Dec.
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2 months.....	Gross \$11,636,154	\$11,393,123	D.	\$243,031
12 "	Net 2,526,156	2,356,964	I.	169,192

2 months.....	Gross \$58,477,498	\$51,051,711	I.	\$7,425,787
12 "	Net 4,122,602	1,997,714	I.	2,124,888

	Aug. 31.	1898.	1897.	Inc. or Dec.
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1 month.....	Gross \$2,492,458	\$2,371,830	I.	\$120,628
1 "	Net 641,657	716,594	D.	74,937

2 months.....	Gross 4,807,458	4,617,322	I.	190,136
2 "	Net 1,102,663	1,271,939	D.	169,276

1 month.....	Gross \$615,680	\$590,662	I.	\$25,018
1 "	Net 177,029	200,061	D.	23,032

2 months.....	Gross 1,236,655	1,130,386	D.	106,269
2 "	Net 342,788	417,150	D.	74,362

1 month.....	Gross \$1,451,014	\$1,439,233	I.	\$11,781
1 "	Net 519,740	706,404	D.	186,664

2 months.....	Gross 2,751,133	2,839,811	D.	88,678
2 "	Net 1,141,073	1,343,416	D.	202,343

1 month.....	Gross \$1,992,765	\$2,093,060	D.	\$100,295
1 "	Net 641,305	650,324	D.	9,019

2 months.....	Gross 3,853,617	4,086,915	D.	233,298
2 "	Net 1,202,409	1,253,568	D.	51,159

1 month.....	Gross \$320,354	\$326,938	I.	\$6,584
1 "	Net 160,804	150,378	D.	10,426

9 months.....	Gross 2,232,679	2,233,226	D.	547
9 "	Net 881,528	896,061	D.	14,533

1 month.....	Gross \$335,901	\$237,772	I.	\$98,129
1 "	Net 81,186	41,789	I.	39,397

2 months.....	Gross 766,968	493,236	I.	263,732
2 "	Net 245,743	103,831	I.	141,912

	Sept. 30.	1898.	1897.	Inc. or Dec.
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1 month.....	Gross \$3,425,583	\$3,423,213	I.	\$2,370
1 "	Net 1,056,163	1,065,179	D.	9,016

3 months.....	Gross 9,196,689	9,232,026	D.	35,337
3 "	Net 2,218,416	2,451,217	D.	232,801

1 month.....	Gross \$551,646	\$524,145	I.	\$27,501
1 "	Net 215,538	186,995	I.	28,543

3 months.....	Gross 1,639,212	1,365,345	I.	273,867
3 "	Net 530,480	479,642	I.	50,838

1 month.....	Gross \$449,019	\$327,149	I.	\$121,870
1 "	Net 160,543	118,209	I.	42,334

3 months.....	Gross 1,266,904	944,458	I.	322,446
3 "	Net 449,859	308,229	I.	141,630

1 month.....	Gross \$4,117,343	\$4,399,829	D.	\$282,477
1 "	Net 1,743,560	1,890,749	D.	147,189

3 months.....	Gross 11,394,397	12,718,948	D.	\$884,551
3 "	Net 4,376,214	4,756,473	D.	\$370,259

1 month.....	Gross \$632,918	\$676,255	D.	\$43,337
1 "	Net 241,912	253,955	D.	12,043

9 months.....	Gross 4,736,963	4,885,441	D.	148,478
9 "	Net 1,266,705	1,481,088	D.	214,383

1 month.....	Gross \$2,804,779	\$2,510,829	I.	\$293,950
1 "	Net 1,719,406	1,459,005	I.	260,401

3 months.....	Gross 6,902,053	6,179,761	I.	722,292
3 "	Net 3,854,016	3,159,588	I.	694,428

1 month.....	Gross \$1,523,786	\$1,352,677	I.	\$171,109
1 "	Net 666,683	561,246	I.	105,437

9 months.....	Gross 11,684,779	10,736,021	I.	948,758
9 "	Net 3,155,886	3,324,611	D.	168,725

1 month.....	Gross \$2,204,714	\$1,945,366	I.	\$259,347
1 "	Net 784,818	667,559	I.	117,259

3 months.....	Gross 6,169,119	5,300,296	I.	868,823
3 "	Net 1,922,855	1,564,424	I.	358,430

1 month.....	Gross \$1,523,786	\$1,352,677	I.	\$171,109
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1 month.....	Gross \$1,523,786	\$1,352,677	I.	\$171,109
1 "	Net 666,683	561,246	I.	105,437

9 months.....	Gross 11,684,779	10,736,021	I.	948,758
9 "	Net 3,155,886	3,324,611	D.	168,725



and to issue \$800,000 5 per cent. 30-year gold bonds to cover the 31 miles of road to be built from Dallas, Tex., to Fort Worth.

**DENVER, LEADVILLE & GUNNISON.**—Holders of Union Pacific 4½ per cent. D., L. & G. bonds, have voted to ratify the agreement providing for the sale of the property to the Union Pacific, Denver & Gulf reorganization committee. Each \$1,000 bond is to receive in U. P., D. & G. securities \$650 in new first mortgage 4 per cent. bonds; \$200 in new first preferred stock, and \$160 in new second preferred stock. (Oct. 7, p. 733.)

The sale of this road, which was to have taken place Sept. 15, has been again advertised for Nov. 18, at 12 o'clock noon, in front of the company's round house, Block 266, West Denver, Col. The sale is made under the first mortgage of Aug. 1, 1889. Each bidder must deposit \$50,000 cash or a certified check, and upon the confirmation of the sale, complete the payment of the purchase price. (Oct. 7, p. 733.)

**DETROIT & LIMA NORTHERN.**—W. B. Strang, Jr., has filed a lien for \$689,755 against this company for labor, material, expenses, etc., in building the road. The Ferguson Contracting Co., of Bellefontaine, O., has filed a lien against the Columbus Northwestern line of this road for \$74,984 for balance due for building that line.

Judge Hammond, of the United States Circuit Court, at Toledo, O., has ordered the receivers of the D. & L. N. to pay to the Columbus Northwestern Co. \$35,000 upon delivery of the deed conveying to the D. & L. N. all the property rights and interests held by the C. N., in accordance with the contract between the two companies, including the track and property operated by the D. & L. N. in its extensions south of Lima. The D. & L. N. went into the hands of a receiver Sept. 6. (Sept. 16, p. 680.)

**GUNPOWDER VALLEY.**—The Circuit Court of Baltimore County, Maryland, has ordered the receiver, Henry Stockbridge, Jr., to sell this road at public auction from the court house door at Towson, at 12 o'clock noon, Nov. 19. The line runs from the Western Maryland RR. to Hoffmannville, about three miles, and went into the hands of a receiver Jan. 6, 1894. By the terms of the sale, one-third must be paid in cash, the remainder in six and 12 months, with a deposit of \$500 from the successful bidder. (Oct. 21, p. 770.)

**KINGSTON & PEMBROKE.**—A special meeting of the stockholders is called to meet at Kingston, Ont., Nov. 21, to authorize the directors, pursuant to an act of the Dominion Parliament, to issue preferred stock of such an amount, not to exceed \$1,000,000, and at such price as will pay the interest on the company's bonds and debentures up to and including Jan. 1, 1899, and the floating liabilities of the company. (May 20, p. 368.)

**LAKE MANITOBA RAILWAY & CANAL COMPANY.**—Sixty miles of the extension from Tifton Junction, Manitoba, north toward Swan Lake, is to be completed this season. (Aug. 19, p. 603.)

**LITTLE ROCK & MEMPHIS.**—This road was sold at public auction at Little Rock, Ark., Oct. 25, by Master in Chancery C. C. Waters, to Adrian H. Larkin, of New York, for the bondholders' committee, at \$425,000. The line, which runs from Little Rock, Ark., to a point opposite Memphis, Tenn., 135 miles, went into the hands of a receiver June 1, 1893. It is to be reorganized as the Choctaw & Memphis, and to form a part of the proposed extension by the Choctaw, Oklahoma & Gulf through Little Rock to Memphis, Tenn. (July 22, p. 540.)

**OCONEE & WESTERN.**—Holders of certificates issued by the Metropolitan Trust Co., New York, on deposit of the bonds of this company, are notified that a meeting is called at 45 Exchange place, New York, for Oct. 28, at 10 a. m., to ratify the sale of the bonds under the bondholders' agreement. This company was organized in 1892 as successor to the Empire & Dublin. It has a charter to build from Grovania, Ga., to Dublin, 53 miles, of which 49 miles is completed from Hawkinsville to Dublin. It has authorized \$9,000 bonds per mile for the entire distance.

**OHIO SOUTHERN.**—Calvin Broadhead, owner of \$175,000 second mortgage bonds, on Oct. 21, at Lima, O., filed a motion to set aside the sale of the road made Oct. 15 to the first mortgage bondholders. He claims that the appointment of special commissions to sell the road was not according to law; that a large number of liens and claims against the road are pending, and that the property was offered under such conditions that many were kept from bidding. (Oct. 21, p. 770.)

**RICHMOND, NICHOLASVILLE, IRVINE & BEATTYVILLE.**—The new management, which bought this road Oct. 6, took possession Oct. 17. (Oct. 14, p. 752.)

A petition was filed in the United States Circuit Court at Louisville, Ky., Oct. 24, by the lien holders, asking that the sale made Oct. 6 be set aside. The plaintiffs are Shanahan & Powell, who hold mechanic's liens for \$180,000, out of a total of \$400,000 of such liens.

**RUTLAND.**—The securities of this company held by the Delaware & Hudson Canal Co., have been sold to P. W. Clement, President of the Rutland Co.

**ST. LOUIS, CAPE GIRARDEAU & FORT SMITH.**—Judge Adams, in the Circuit Court, at St. Louis, Mo., Oct. 22, decided in favor of the claim of Costello Lippett, Newman Erb and Henry Land for the payment of \$653,740 of bonds, with interest, amounting in all to about \$703,000. (Sept. 2, p. 640.)

**ST. LOUIS, KANSAS & SOUTHWESTERN.**—Master in Chancery Hiram P. Dillon, sold this road at Arkansas City, Ark., to Samuel Baker, of Hamilton, Ont., a representative of the creditors, for \$150,000. The line runs from Arkansas City to Anthony, Kan., 59.35 miles. It went into the hands of a receiver Nov. 28, 1896. (Sept. 16, p. 680.)

The receivership of Dwight Braman was extended over the property and assets of this company in Massachusetts by Judge Colt, of the United States Circuit Court, at Boston, Oct. 22. The receivership was asked for in a bill of equity brought by Richard W. Hale, of Boston. He alleges that 158 bonds of the company were about to be sold and transferred to parties outside of Massachusetts.

**SEABOARD AIR LINE.**—Holders of more than four-fifths of the bonds of the Carolina Central line of this company have assented to the agreement for reducing the debt, and the plan is declared effective. (Sept. 23, p. 698.)

**SIOUX CITY, O'NEILL & WESTERN.**—The United States Supreme Court has handed down a decision affirming the decision of Judge Shiras of the Federal Court of the Northern District of Iowa, awarding the title to J. Kennedy Todd & Co. of New York, to \$2,340,000 first mortgage bonds of this company, and to \$1,060,000 stock of the Sioux City & Northern, which were issued to secure a loan of \$1,500,000 from J. Kennedy Todd & Co., and a bridge company. The Credits Commutation Co. of Sioux City, which owns all the assets of the two railroad companies, may redeem these securities by paying J. Kennedy Todd & Co. the \$1,500,000 and interest, amounting to about \$2,000,000. Both roads are in the hands of receivers.

**STATE LINE & SULLIVAN.**—The stockholders who are to meet on Dec. 8 will take action on the question of refunding the \$300,000 gold bonds maturing Jan. 1 next, into new \$300,000 bonds at 4½ per cent., to mature in 30 years, but with the option of redemption after 15 years. This refunding will effect a saving of \$4,500. (Oct. 21, p. 770.)

**TERRE HAUTE & LOGANSPORT.**—Judge Baker, of the Federal Court at Indianapolis, Ind., has given the receiver permission to pay \$93,030 interest due on the \$1,000,000 extension mortgage 6 per cent. bonds. On this account the sale of the road, which was to have taken place at Crawfordsville, Ind., Oct. 20, was postponed. (Sept. 30, p. 716.)

**TOLEDO, ST. LOUIS & KANSAS CITY.**—Hearing on the bill for the decree of foreclosure has been postponed until the December term of court. (May 27, p. 384.)

**UNION PACIFIC.**—The Government directors, in their annual report to Secretary Bliss, state that the entire Government indebtedness for subsidiary bonds issued on the line of the Kansas Pacific, including interest to Apr. 1, 1897, was \$12,891,900. The amount realized from the sale was \$6,303,000, leaving the total indebtedness to the Government at that date \$6,588,900. Proceedings have been instituted against the Union Pacific by the Department of Justice for this deficit, together with interest on the entire indebtedness from Apr. 1, 1897, to Feb. 16, 1898, and interest on the \$6,588,900 from Feb. 16.

**UNION PACIFIC, DENVER & GULF.**—This road, the Denver, Texas & Gulf, and the Denver, Texas & Fort Worth, will be sold under foreclosure by Special Master Marshal E. Johnson, Nov. 19, at 2 p. m., at Old Line Junction, Pueblo, Col. Each bidder for each of these roads must deposit \$50,000 cash or a certified check, or \$150,000 of the first mortgage bonds of the road, or \$200,000 of the U. P., D. & G. bonds. The upset price of the D., T. & G. is \$1,500,000; of the D., T. & F. W., \$2,500,000; of the U. P., D. & G., \$5,250,000, and on the whole property \$9,000,000. The successful bidder must deposit an additional \$100,000 cash, or certified check, or a proportionate amount of bonds, at the time of the sale, and complete the payment within 30 days. (Oct. 7, p. 734.)

**WILMINGTON & NORTHERN.**—The Philadelphia & Reading has bought a majority of the stock of this company, with which it has heretofore had a traffic agreement. The line runs from Wilmington, Del., to High's, Pa., 71.5 miles, with branches aggregating 16.91 miles. It has trackage over the Schuylkill & Lehigh from High's Junction to Reading, 2.42 miles, and over the West Reading & Lebanon Valley of the P. & R., 3.89 miles, making the total operated 92.3 miles. The capital stock is \$1,278,050; the bonded debt \$750,000. This transfer gives the P. & R. valuable terminals in Wilmington.

**YORK SOUTHERN.**—Judge Bittenger at York, Pa., Oct. 15, refused to interfere in the transfer of the stocks and bonds of this company to the Security Title & Trust Co. (Sept. 9, p. 657.)

#### Electric Railroad News.

**BALTIMORE, MD.**—The Baltimore & Northern Electric Ry. Co., which operates about 30 miles of track, has started a package express business.

**BOSTON, MASS.**—The stockholders of the West Roxbury & Rosindale St. Ry. Co. voted to increase the capital stock for the purpose of funding the floating debt and extending the tracks.

**BRADDOCK, PA.**—A. L. Sailor and William M. Brown were appointed receivers of the Braddock Electric Passenger Ry. Co. The receivers were asked for by Isaac M. Heldsberg and A. M. Sailor, officers of the company, and William M. Brown, one of the bondholders.

**NEW HAVEN, CONN.**—I. A. Kelsey, Treasurer and General Manager of the Winchester Ave. R. R., has resigned, local papers state, and A. E. Pond, Superintendent of the road, succeeds him.

The stockholders of the Fair Haven & Westville St. Ry. Co. will meet Oct. 31, to act on a proposition for acquiring control of the properties of the New Haven St. Ry. Co. The latter corporation owns lines to Fair Haven and Westville, competing with the Fair Haven & Westville Co.; also branch lines to Cossy Beach, Lighthouse Point, Lake Saltonstall, Morris Cove and Mount Carmel. It has \$1,000,000 of capital stock issued for purchase of roads of other companies, for reconstruction and equipment, a first mortgage of \$600,000, a purchase-money mortgage of \$250,000, besides two small division mortgages. The company paid last year 2½ per cent. on its stock.

**WAKEFIELD, MASS.**—The Mystic Valley St. Ry. Co. has petitioned the State Railroad Commissioners for permission to issue \$80,000 5 per cent. gold bonds.

#### TRAFFIC.

##### Traffic Notes.

The Joint Agent at Pittsburgh, Pa., appointed to validate round trip tickets to the Knights Templar convolve, received in all 6,625 tickets.

In the District Court at Austin, Tex., Oct. 11, the St. Louis Southwestern pleaded guilty in 20 cases of violation of the state railroad law (prescribing freight rates) and judgment of \$500 in each case was entered against the company.

The Great Northern has followed the Northern Pacific in reducing local passenger fares throughout the states of Washington and Idaho, to four cents a mile. It is said that a similar reduction will be made by the Great Northern in Montana, though that state was not mentioned in the announcement of the change on the Northern Pacific.

The arbitrators in the matter of freight rates between San Francisco and points east of the Missouri River have decided that the Canadian Pacific is not entitled to differentials. The arbitrators were W. A. Day, J. W. Midgley and Edward S. Washburn. It is reported, as we go to press, we hope incorrectly, that the Canadian Pacific has declined to be bound by the findings of the arbitrators, "because the case was decided entirely on technical grounds."

A press dispatch from Austin, Tex., says that the Attorney-General of the state has, within the last two years, recovered \$67,500 in penalties from the railroad companies for violating the law of the state regulating freight rates. The penalties were the minimum (\$500) in each case, and it is said that the Gulf, Colorado & Santa Fe has paid \$10,000, the St. Louis Southwestern \$10,000, the Missouri, Kansas & Texas \$12,500, the Southern Pacific \$25,000 and the International & Great Northern \$10,000.

The National Association of Traffic (Freight Bureau) Commissioners, which has been actively endeavoring to make the express companies pay the war revenue tax on bills of lading for goods sent by express, has issued a pamphlet advocating the extension of the parcels business of the Post Office Department. The Attorney General of the United States has decided that where an express company carries a package for a railroad company, over the line of the same railroad, the receipt need not pay the stamp tax.

On Friday last the Managers of the Joint Traffic Association recommended an advance in the rates on grain, except corn, to the basis of 20 cents per 100 lbs., Chicago to New York, from 18 cents. It was proposed that the rate go into effect Nov. 5, but Commissioner Blanchard has announced that the advance has been postponed. Within the last few days reports from Chicago have indicated that large quantities of grain were being contracted for to Baltimore and other seaboard points at about 10 cents per 100 lbs. In other words, the extensive and radical rate cutting, which a few weeks ago was said to have been stopped, has broken out again and is as violent as ever.

The European demand for grain continues exceedingly heavy, sales of a million to two million bushels a day at the New York Exchange being the common thing. It appears that a very large part of the grain sold at New York is being ordered shipped by way of Baltimore or ports farther south, and this is said to be due largely to the fact that in the winter vessels going to England can take larger loads from the more southerly ports. Under the "winter load line," prescribed by the British Board of Trade, vessels can take considerably larger loads from the south ports than from New York, making, at the present rates of about four shillings a quarter, a difference in many cases of \$2,000 in the transportation charges on a single shipload.

#### Chicago Traffic Matters.

Chicago, Oct. 26, 1898.  
Grain rates by lake continue to go up, vessel room being somewhat scarce. The water lines are now getting 3½ cents on wheat and 3 cents on corn. As a consequence of this condition the all-rail lines are doing a big business. Notwithstanding the heavy traffic and the apparent willingness of shippers to pay the 18-cent tariff rate, there is still a good deal of cutting going on among the strong as well as the so-called weak roads. During the last week there has been a decided tendency on the part of Chicago local freight agents to keep close to the printed rates, but it is impossible to say how much this amounts to, for enormous quantities of grain have undoubtedly been taken at somewhere about 10 cents per 100 lbs. to Baltimore, and the restoration of the tariff has been postponed.

Party rates are causing trouble among the Chicago-St. Paul lines. The Milwaukee & St. Paul has charged the Great Western with employing brokers in the twin cities to round up 20 or more "floaters" and then selling the brokers 20-ride party tickets at \$8.05, the regular rate for these tickets, the broker in turn charging the passenger \$9, which means a profit of \$19 for the scalper on each one of these tickets sold, and a saving of \$2.50 to each person traveling on the ticket. The matter is now before Chairman Caldwell.

Thirty-two Chicago scalpers were enjoined against buying or selling the return portions of iron-clad tickets sold from Indianapolis, Columbus, Toledo and Detroit to Chicago on account of the peace jubilee held here last week. The injunctions were secured by the interested eastbound roads, namely, the Chicago, Indianapolis & Louisville; the Pennsylvania, the Lake Shore & Michigan Southern, the Cleveland, Cincinnati, Chicago & St. Louis; the Michigan Central, the Chicago & Grand Trunk and the Wabash. So far as could be learned, none of the brokers violated the injunction. The most that could be done with any of the scalpers ignoring the restraining order would be to cite him for contempt of court. While the Western roads took no part in the securing of the injunctions, they shared in the expenses of the proceedings, and co-operated in the work. The tickets have now expired by time limitation, but the attorney who has the cases in hand for the railroads says the injunctions can be continued or revived so as to cover future issues of iron-clad signature tickets. As it stands now, the injunctions were a decided victory for the railroads.

Some railroad officers here were surprised at the Supreme Court decision in the Joint Traffic Association case, having believed that the finding would be favorable to the roads. The Western Trunk Line Freight Committee and the Central Freight Association are the only organizations with headquarters in this city that can be affected by the decision, and it is quite likely that they will not be found to be infringers of the law. Of course, the Joint Traffic Association agreement has had little effect here for months in maintaining rates.